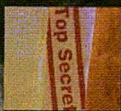


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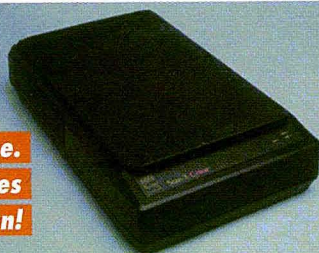
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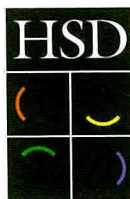
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NEX-193

NEXTWORLD

February/March, Volume 3, Issue 1

C o n t e n t s

Features

DATA DASHBOARDS 20

It's what's up front that counts: Part I of a report on the NeXT database market

BY DANIEL MILES KEHOE

SECRETS OF 3.0 27

A top-secret dossier of hidden NeXTSTEP clues reveals a slew of functionality

BY LEE SHERMAN

OPTICAL COMEBACK 30

With the original NeXT OD on the ropes, third-party optical drives have entered the ring

BY SIMSON L. GARFINKEL

Community

SCRAMBLING FOR POSITION 6

HSD's David Peter credits hard work and fast thinking

BY KATHY DALLE-MOLLE

NEXTSTEP, GERMAN-STYLE 6

Some of the most innovative new programs happen to be German

BY ELIOT BERGSON

COMMENTARY: PUBLISHING SPLASHDOWN 7

The Seybold proclamation that never was

BY DAN RUBY

ONE-STOP SHOPPING 7

Pencom Systems offers NeXT customers a full menu of services

BY HELEN PIKE

MANAGED CARE 8

A NeXT solution boosts efficiency at Preferred Health Care

BY SIMSON L. GARFINKEL

COWBOY CAPITALIST IN MOSCOW 10

NeXT wows the Russians and a Texan does some business

BY CLAIR WHITMER & SALLY CHEW

PLUS the latest installments of *Ten Most Wanted* and *New in Shrinkwrap*, and introducing *Time Capsule*, *Thread of the Month*, and *Lt. Sullivan's Image Lab*

Reviews

SCANNING THE LANDSCAPE 40

Take our tour of the hardware and software options for digitizing your images

BY RICK REYNOLDS

COMFORTS OF HOME 45

Athena Design's Mesa spreadsheet will seem familiar to 1-2-3 and Excel users

BY ROBERT LAURISTON

REMOTE CONTROL 47

Microphone II, from Software Ventures, offers powerful scripting tools

BY ROBERT LAURISTON

IN BRIEF 64

3D Reality from Stone Design, Adamation's What's Happening, and Shout from Information Technology Solutions

REVIEWS DESK 67

Dan Lavin and his gang rate an assortment of products at our newest desk

Viewpoints

THE NEXT WORLD 3

Dan Ruby savors the rewards and counts the products

LIP SERVICE 5

Readers' forum

DEVELOPER CAMP 35

Simson Garfinkel considers the advantages of sleeping with the enemy

NEXT INK 37

Dan Lavin unravels the mystery of the Steve Jobs spell

VANISHING POINT 76

John Perry Barlow's recipe for avoiding corporate indigestion

NEXT GAMES 76

Scarlet Letter

Cover Photography by FPG/Zimmermann

NEXTWORLD

Vol. 3, No. 1 FEBRUARY/MARCH 1993

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People were taking the market offered great opportunity. Risk was moderate and the return was high.

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As our cover proclaims 50 products in that's 22 scanners, eight tools, six optical disk drive com package, a 3-D motion managers, and a the reviews editor's desk

The abundance of information also calls for some change be coming out more often will be a very eventful history of information. The called readers) and more remain bold).

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UARY/MARCH 1993

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THE NEXT WORLD

Two years ago, when this magazine was publishing its early issues, there was little to cover in the way of third-party hardware and software. NeXT was out there advocating. Developers were just beginning to try out their ideas. Entrepreneurs were writing their business plans.

People were taking risks because they believed that the NeXT environment offered great opportunities. The same equation held for users. The risk was moderate and the potential payoff substantial.

Now, as NeXTWORLD begins its third year of publication, we no longer have the problem of finding products to fill our pages. In virtually every category of hardware, software, and networking products, NeXT users today face almost an embarrassment of riches. The third-party horses have found their legs. Their nostrils are flaring. They're ready to stampede.

As our cover proclaims, we award cube ratings to 50 products in this issue. For the record, that's 22 scanners, eight database development tools, six optical disk drives, a spreadsheet, a telecom package, a 3-D modeler, various group-information managers, and a page full of goodies from the reviews editor's desk.

The abundance of products means that the users' risk is paying off. It also calls for some changes in this magazine. For one, NeXTWORLD will be coming out more often. This is our first of six issues in what we think will be a very eventful 1993. Inside the magazine, we've increased the density of information. There is more type on the page (apologies to our bifocaled readers) and more restraint in our design (which will nevertheless remain bold).

Our old Openers graphics have been merged into a redesigned Community section. How-to information will now be integrated into feature articles and reviews, as in this issue's "Secrets of 3.0." You will notice that

Barlow and Lavin, having hyperextended their thumbs, now reside on separate pages. Dan Lavin resumes his NeXT Ink business column, while John Perry Barlow takes ownership – alongside Scott Kim's wonderful NeXT Games – of our Vanishing Point back page.

Our three-section format gives greater emphasis to reviews, appropriate for a market brimming with products. We have modified our rating system to permit half cubes. We have also raised our standards when it comes to awarding cubes. Read our reviews policy statement in this issue and then count the number of our 50 products with ratings of 3 or 3.5.

Message to the developers out there: We're going to make you earn that fourth cube.

The one thing that's missing from the magazine is NeXTWORLD Extra, which is now published separately. If you need news of the NeXT market as it breaks every month, we hope you don't mind that NeXTWORLD Extra now really is. If you want a deeper bimonthly sweep of the NeXT world – its trends and controversies, technology and business, hot and not-so-hot products – then you're reading that magazine now.

At bottom, NeXTWORLD is all about enhancing your experience as a NeXT user. It's

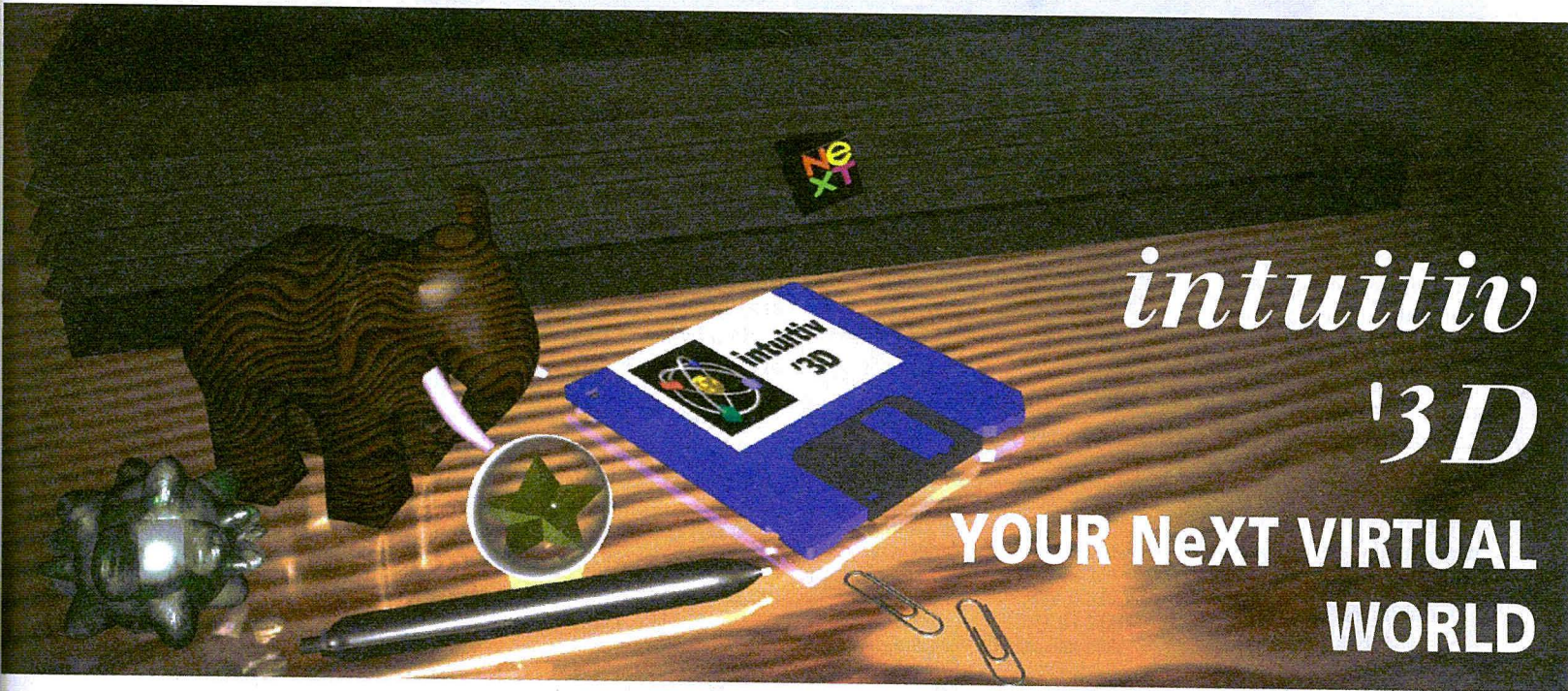
about software that boosts your productivity, hardware powerful enough for your toughest tests, technology that promotes collaboration, and a community with a vision for the future.

Of course, the risk each of us took in choosing NeXT is not yet behind us. That's part of what makes it exciting. We enjoy benefits unavailable to users of other systems, but we also know that we are in for an occasionally bumpy ride. It's called the NeXT experience. You can't get it anywhere else. We're pleased to be your guide. ♦

DAN RUBY is editor in chief of NeXTWORLD.

Risk and Reward

DAN RUBY



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Geek speaks

I know that Joe Geek's machine at home is a NeXT compared to a p at Solomon Bros. But v tries to get a simple mo because he has no net f his desk and has to dea year-old UUCP stuff fo just to get Mail up . . . not as if Joe hasn't don on other weenie boxes.

All Joe wants is to the simple stuff working ignored or let fall throu cracks. He understands has great potential, but that NeXT has provide much sales hype as how expects the NeXT to m abilities of other current and take off from there.

I'm sending this by c ASCII because my NeX up still isn't working rig

BILL ROMANOWSKI
Lebanon, Indiana

ADB woes

Today I add WordPerfect those programs NeXT t much pride in running, t software that doesn't we ADB. WordPerfect with board is like a bicycle wi tires/chain/pedals/handle warned me I'd have to ac monitor; they didn't say going to break all the sof already purchased!

And where the hell v WORLD? Not one worc Winter 1992 issue (see "E about how the keyboard to cause all this trouble. I impression NeXTWOR asleep at the wheel. I w been very happy if you ha out and said the keyboar require that some prograr modified, and then publis of those products.

I love the new keybo my EMACS trackball, I l 12-by-12 digitizer tablet isn't eating my serial ports afraid I'm going to have t ADB off-line. These goodi good to me if my software work with them.

SCOTT TURNER
Edmonds, Washington

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L E T T E R S

Geek speaks

I know that Joe Geek and his single machine at home is a small sale for NeXT compared to a pile of them at Solomon Bros. But when Joe tries to get a simple modem up because he has no net plug under his desk and has to deal with 10-year-old UUCP stuff for two weeks just to get Mail up . . . Yow! It's not as if Joe hasn't done it before on other weenie boxes.

All Joe wants is to get some of the simple stuff working that NeXT ignored or let fall through the cracks. He understands that Mach has great potential, but it seems that NeXT has provided twice as much sales hype as how-to. Joe just expects the NeXT to meet the capabilities of other current machines and take off from there.

I'm sending this by dumb UNIX ASCII because my NeXTmail dial-up still isn't working right.

BILL ROMANOWSKI
Lebanon, Indiana

ADB woes

Today I add WordPerfect, one of those programs NeXT takes so much pride in running, to the list of software that doesn't work with ADB. WordPerfect without a keyboard is like a bicycle with no tires/chain/pedals/handlebar. NeXT warned me I'd have to adjust my monitor; they didn't say they were going to break all the software I've already purchased!

And where the hell was NeXT-WORLD? Not one word in the Winter 1992 issue (see "Ergo Style") about how the keyboard was going to cause all this trouble. I get the impression NeXTWORLD was asleep at the wheel. I would have been very happy if you had come out and said the keyboard would require that some programs be modified, and then published a list of those products.

I love the new keyboard, I love my EMACS trackball, I love my 12-by-12 digitizer tablet - which isn't eating my serial ports. But I'm afraid I'm going to have to take the ADB off-line. These goodies are no good to me if my software doesn't work with them.

SCOTT TURNER
Edmonds, Washington

We covered the keyboard when it was still in beta, and it was unclear what incompatibilities would survive in the final version. We have covered the ADB compatibility problem in NeXTWORLD Extra. - NW

An objection

We are excited to see the object market receiving the attention of NeXT and the press. Unfortunately, "Objects 'R' Us" in the Winter 1992 issue misrepresented Objective Technologies's palettes. The company and its products span a broader range than just the consulting work, for which your article indicates the palettes are "primarily designed."

OTI has two divisions: consulting, which does custom development for clients; and software, which focuses on general-use tools and applications.

ERIC BERGERSON
Objective
Technologies
New York

Stop the prepress

In the special report ("Hey Mac, Stop the Presses!") in the Winter 1992 issue, you reported on several solutions for connecting Canon CLCs, including offerings from Canon and Goldleaf Software. All of these you reported as "shipping somewhere in the near future." You failed to mention, however, HSD GmbH's ColorX software, which has been shipping since September.

This is especially surprising, as you reported on our product when it was first demonstrated back in March, at CeBIT, though the company was then called Networx. We were impressed by the positive feedback from our prerelease customers, and so, when NeXTSTEP 3.0 was delayed, we decided to release the current 2.1 version in September.

MARCEL WEIHER
HSD GmbH
Berlin

DB or not DB?

It would be helpful if NeXT-WORLD put more emphasis on the database-app market, especially now, with downsizing such a big thing. So far, it's unclear how to build a complete custom application, for example. NeXT seems to be missing two critical tools: Query Panel and Report Writer. DBKit should have a Query Panel; where is it?

And who has the best text fields? NeXT certainly doesn't. The Form and Text-Field objects are completely inadequate for custom apps because you can't set, via Interface Builder, an edit mask or auto-skip attribute. If 4th Dimension and FoxPro has these features, why not NeXT?

I'd like to hear more about the objects in the ObjectWare catalog too. And how does DBKit fit in with the upcoming ODBMS products? The Query Panel and Report Writer also deserve special attention. Just about every database product for PCs, Macs, UNIX workstations, minicomputers, and even

mainframes have a way to do ad hoc queries and reports. NeXT needs to get with it!

JAMES ENGEL
Burlingame, California

Our "Data Dashboards" story in this issue covers third-party database front ends and tools. - NW

Windows gotcha

I've heard a lot about how useful Objective-C, Smalltalk, and dynamic binding are ("Objects 'R' Us," NeXTWORLD, Winter 1992). But I also hear PC developers say Windows supports "dynamic binding" just like the NeXT. They tell me that when Microsoft updates Windows, all Windows programs are updated automatically.

So what's the difference? I've

got a feeling there's a Windows gotcha in this somewhere, but I don't know enough about either programming environment to pinpoint it for sure. Is this just musical-chair semantics?

DAVID L. NEUMANN
Houston

You're confusing "dynamic binding" with "dynamically linked libraries" (DLLs). Microsoft's DLLs allow developers to use one copy of a library to facilitate sharing across applications. NeXTSTEP also supports this feature, but we call them "shared libraries."

Dynamic binding is a feature associated with object-oriented programming (OOP) languages. This allows developers to accomplish many tasks on the fly, without being forced to declare all behaviors statically at compile time. Microsoft Windows is not built using an OOP language and does not have language support for any of these concepts. - Steve Naroff, NeXT

Head of the class

I've watched you guys grow from a somewhat overhyped, fluffy magazine into a well-rounded, informative one, while maintaining a sense of class and professionalism. Keep up the good work!

BRETT WALKER
Malibu, California

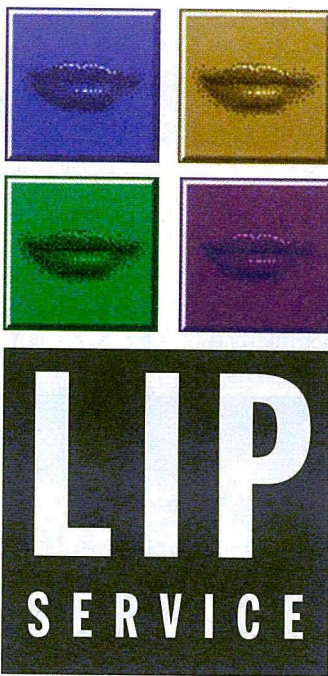
I just wanted you to know that NeXTWORLD has kept my mind from overboiling with the typical biochem undergrad midterm stuff. It continues to keep me interested on those long commuter train rides into Philadelphia.

JOHN WATERS
Princeton, New Jersey

For the record

NeXTWORLD listed the wrong price for the ZyXel U-1496 in the Winter 1992 review, "Just the Fax." The correct price is \$799.

NeXTWORLD welcomes your comments. Please send them to Letters at NeXTWORLD, 501 Second St., San Francisco, California 94107, or e-mail letters@nextworld.com.

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Scrambling for Position

ENTREPRENEUR

DAVE PETER REMEMBERS HSD MICROCOMPUTER U.S.'s CLIMB TO NUMBER one among scanner vendors in the NeXT market as a series of "scrambles." He recalls in particular the day he was settling into the company's first office when the debut shipment of scanners arrived from Germany.

"A truck arrived in front of the office with 60 scanners, and I realized that I had nowhere to put them," says Peter, HSD's president. "So I drove to the very first self-storage place I could find and rented space. That was our first warehouse."

Between scrambles, however, there have been 70-hour, seven-day work weeks with the firm's six staff members performing several jobs each. The hard work has paid off: The company is the dominant player in the growing NeXT scanner market. Last year, sales for the Mountain View, California, firm grew to \$2.5 million — more than double the previous year's revenue.

NeXT first caught Peter's eye while he was working in Germany for what is now HSD's parent company, HSD GmbH, a \$35 million retail, distribution, and product-development company. After a year overseeing international sales for the firm, Peter wanted to move back to the United States and start a subsidiary of the high-tech company.

When he presented his NeXT plan to his HSD bosses, they agreed to fund the start-up scanner manufacturer on one condition: Peter first had to win a dealer agreement with Businessland, the exclusive commercial

reseller of NeXT at the time. So, still in Germany, Peter started courting Businessland executives.

"I was trying to convince Businessland that we were a big, established company in the United States, when, in fact, we didn't even have an office here — just a telephone line and an answering machine," he recalls.

By November 1989, Peter had a signed contract and purchase order from Businessland and an agreement from HSD GmbH to fund the first batch of inventory.

As it happened, of course, that deal turned out to be only the first of many hurdles. Businessland disappeared from the scene, NeXT veered from the traditional scanner market in graphics, and the installed base grew only slowly. Despite that, HSD sold enough units to eke out some profits, and it positioned itself to grow dramatically as publishing, document-management, and OCR applications increased demand for NeXT scanners.

"We've been able to succeed because we're small, adaptable . . . and realistic," Peter says.

Looking to the future, HSD plans to continue expanding its hardware line while also embarking on more software projects like Simon Says, a program that controls NeXT applications by voice.

Peter, scrambling less than he used to but continuing to put in long hours, is watching for NeXTSTEP '486 software opportunities in particular. "Maybe you'll even see a new HSD company or a software division for NeXT products," he hints. ♦

by KATHY DALLE-MOLLE



HSD's Dave Peter got his foot in the NeXT door early.

NeXTSTEP, German-style

COMMUNITY HOT SPOT

Germany has been exporting graphics technology since Gutenberg, so it wasn't surprising that two of the most innovative publishing applications in NeXT's Seybold booth last September came from German developers. The message was clear in any language: NeXT users should get ready for a little schlag with their kaffee.

German developers are helping NeXT push its publishing message through what Peter Lipps, with NeXT's Munich office, calls "The Hamburg Connection," referring to programmers who trade information and ideas in that center of German publishing. Unter Ecker Software and 3K Computerbild demonstrated innovative photo-compositing and image-manipulation apps at Seybold. Federico Heinz has developed Dots, for PostScript-printer connectivity; tms Software is shipping 1VISIO, a modular solution for multimedia and traditional publishing; YumYum Software has added a FrameMaker interface to its VarioData database for simplified database publishing; Opto-Tech is offering high-end repro-scanner hardware and software; and ProficomP is working on Gallery, an entrant in the nascent NeXT video market.

This should come as no surprise. Germany is a wealthy country with upscale consumers, a long history of technical advances, and an entrenched personal computer platform that no longer meets the needs of developers. And as Atari got the way of the Berlin Wall, German programmers are switching to NeXT in large numbers.

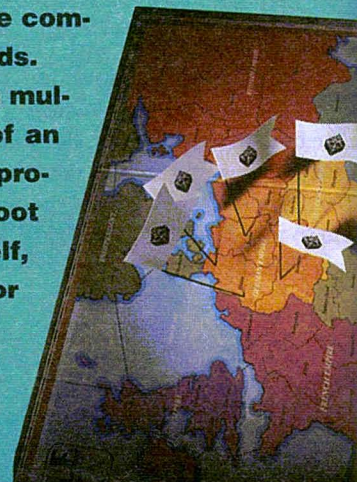
"There are at least 200 registered developers here," Lipps says, more than 50 of which have commercial products. "There are some very interesting programs coming in the near future," he adds.

As part of an electronic media-art lab at the huge Documenta Art Show in Kassel this fall, a multimedia workgroup used a NeXTdimension running DSP-modem software from i-link as part of an interactive television exhibit. As many as 40,000 people an hour tried to call and get on the program, which was carried by Germany's 3SAT network. In Karlsruhe's football stadium, a 30-foot video screen run by NeXT software displays graphics and player photos. And in Hamburg itself, Digital Collections, a NeXT VAR, has put together a hypermedia information-retrieval system for broadcasting and publishing companies.

This wave of excitement follows a sour experience with Atari, by far the largest installed PC system in Germany, with Germany in turn the largest Atari base in the world. Atari

PAGE 13

PHOTOGRAPH BY DAVID MAGNUSSON



ILLUSTRATIONS BY GORDON STODER

Nothing new in the bag Second Ten (ST*). Still Like several items on th But we don't want to w

RANK	LAST TIME	ISSUES ON LIST	IT
1	10	2	19
2	—	1	N
3	—	1	Ti
4	2	5	R
5	4	3	N
6	1	5	N
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8	ST*	5	G
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10	ST*	2	M

Publish Splashdown

COMMENTARY

In years past, NeXT has i occasion of the Fall Sey reference to make a splash lishing and graphics. The have been little in the wa ping applications to mak NeXT's great underlying ogy, but there was always sizzle and flash to make i ers stop and take notice.

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PHOTOGRAPH BY JULIE CHASE

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TEN MOST WANTED

Nothing new in the bag, but new concerns push some old ones into the Second Ten (ST*). Still no word on NeXTWORLD Expo at press time. Like several items on this list, the Expo has slipped to later in the year. But we don't want to wait that long.

RANK	LAST TIME	ISSUES ON LIST	ITEM	COMMENT
1	10	2	1993 Expo information	Name the date
2	-	1	NeXTSTEP 3.1	Current version is 2.9
3	-	1	Timely '486 shipment	Early and often
4	2	5	RISC workstation	Depends on chip supply
5	4	3	NeXT management stability	Hire two great VPs
6	1	5	NeXTSTEP notebook	See No. 3
7	7	4	Expanded marketing message	Recent reorg may help
8	ST*	5	Group-project management	Reader mentions are up
9	ST*	2	Object-management standard	Waiting for ODI
10	ST*	2	Major industry alliance(s)	Users want security

ILLUSTRATIONS BY GORDON STUDER

Publishing Splashdown

COMMENTARY

In years past, NeXT has used the occasion of the Fall Seybold conference to make a splash in publishing and graphics. There may have been little in the way of shipping applications to make use of NeXT's great underlying technology, but there was always ample sizzle and flash to make nonbelievers stop and take notice.

This year, when NeXT finally had a real publishing solution to offer at the 1992 conference, held in San Francisco in September, the splash was more like a ripple.

To the tens of thousands of publishing professionals in attendance who were not already in the NeXT camp, few may have noticed anything was different. NeXT's booth looked the same as it has in the past, with waves of demo stations but little emphasis on shipping products. Jaded observers walked by without a second look.

PHOTOGRAPH BY JULIE CHASE

Strapped for marketing dollars, NeXT passed up opportunities to grab mindshare. There was no NeXT press conference, no Gutenberg's garage, no outreach to the great unwashed.

Even Steve Jobs's keynote lacked the customary electricity. While he offered one impressive



Seybold: *Never mind the perception*

demonstration of a custom application developed with RightBrain's PasteUp and DBKit, he neglected to mention the many other important NeXT publishing applications. For solutions-oriented customers, it seemed as if NeXT was still long on promises and short on delivery.

Worse, NeXT no longer seemed even the most

♦ PAGE 15



One-stop Shopping

NEXT SERVICES

PENCOM SYSTEMS PRESIDENT ED TAYLOR'S ROLODEX OF UNIX PROGRAMMERS recently topped 80,000. They can do UNIX any way you like, but many of them do it the NeXT way.

"It's missionary work. We're shaping the industry," says Taylor, who last year added NeXT training and consulting services to Pencom's recruiting portfolio, complementing its already considerable status as an integrator and software developer on the platform.

Pencom Systems, a \$40-million-plus firm headquartered in New York, began modestly 19 years ago by placing mainframe Cobol programmers. In 1981, five years after Taylor came on the scene, the company switched to UNIX. Pencom hasn't looked back since, leveraging its UNIX expertise into a successful array of projects. Contract programming now brings in 50 percent of the company's revenue, while recruiting contributes 35 percent, and software services and training account for the remainder.

The company's romance with NeXT began in 1990, when Pencom decided to standardize on a development platform. After a thorough evaluation, the engineering staff settled on NeXT. There was only one problem – the lack of a good X Window implementation for NeXTSTEP. The answer was co-Xist, a version of the standard UNIX windowing environment that shares the screen with the NeXT interface.

"It was a tool born of need," says Taylor. Now in its second major release, co-Xist is available as a shrinkwrapped program from Pencom's Austin, Texas-based software division.

The Austin connection grew out of Pencom's long association with IBM's advanced workstation division, the unit responsible for the computer giant's AIX UNIX implementation and RS/6000 workstations. Last October, the company scored a coup by hiring the division's former general manager, Frank King – most recently the vice-president of software for Lotus Development – as president of Pencom Software.

King takes over a service operation that offers application development, systems integration and administration, training, and support. "The goal is to offer one-stop shopping for the open-systems community," Taylor says.

Pencom already offers a complete menu of services to major NeXT customers, such as Chrysler Financial and Preferred Health Care, through its partnership with NeXTedge, NeXT's service and support organization. One of the first NeXT users to benefit from Pencom's new multiservice approach was the New York-based Organization Resources Counselors (ORC), which decided to go the UNIX route by downsizing from an IBM 4341 mainframe to RS/6000 workstations for its back-office operations and user-friendly NeXT machines at the front end.

Pencom's NeXT practice is a fertile part of its open-systems portfolio. The real need is for systems that integrate NeXT in multiplatform, client-server installations. That's what keeps Ed Taylor flipping through his Rolodex of programmers. ♦

by HELEN PIKE

ILLUSTRATION BY MARY LYNN BLASUTTA



Managed Care

IN THE TRENCHES

THE PROGNOSIS IS EXCELLENT AT PREFERRED HEALTH CARE, A FAST-GROWING mental-health and substance-abuse referral service that is benefitting from NeXT's particular brand of computer medicine: object-oriented programming. As one of the largest in its field, the company and its new setup may well set an industry standard for good care at a good price.

Preferred's approach is simple: Offer clients round-the-clock, personalized telephone service. The Wilton, Connecticut, firm keeps costs down by closely monitoring its cases and supplements referrals with its own staff of physicians and social workers.

To hear Chief Information Officer Estal Fain speak, the 11-year-old company's secret is the tight integration of database and communications systems. It maintains a corporate database of 35,000 health-care providers across the country, tracking such details as skill level and training, staff size, and performance record. Preferred's eight offices receive a total of 12,000 telephone calls a day.

Behind Preferred's ability to provide this unique level of service is a commitment to top-notch programming. To service its customers, which range from General Motors to the state of North Carolina, the company develops custom modules that allow its computer to communicate directly with each client, exchanging employee and insurance information as necessary. That's how Preferred's list of five million customers is kept constantly up-to-date.

But Preferred hadn't applied NeXTs to this task until this year. It had been running the company on an IBM AS/400 system programmed in RPG and Cobol, with telephone operators using dumb terminals to access the database. Indeed, says Fain, the problem with growing at 30-to-50 percent per year is that you "tend to do things quick and dirty."

That's why Fain was hired two years ago – to completely redesign Preferred's network. The proud driver of a 1983 Datsun with more than 190,000 miles, Fain is a man with an eye for value. The system that he has designed is cost-efficient, expandable, and highly redundant.

Fain's system is based upon a network of Sequent super minicomputers, with one located in each of Preferred's eight regional offices. Each Sequent has its own copy of Preferred's database; updates happen locally in real time and are then distributed to the other servers at the other locations. High-speed Frame Relay channels leased from Williams Telecommunications connect the offices.

Not only does this setup provide high performance, says Fain, but it gives Preferred a level of redundancy that is unheard of in the industry. If Preferred loses an entire regional office to fire or earthquake, all it has to do is reallocate the distribution of incoming toll-free telephone calls.

Fain was committed from the start to a client-server approach and object-oriented applications in every office. His goal was to have two programming groups: one developing objects, the other assembling those objects into applications. The choices were Windows, Macintosh, NeXT, and Sun; Fain chose NeXT because it was the only system from

which the prototypes built with the developer's tools quickly turned into working products.

Another advantage of NeXT was cost. Preferred's minimum desktop configuration had to be capable of displaying scanned images of hospital forms. That translated into a workstation with 8MB of RAM, a 200MB hard disk for local caching, and a high-speed network configuration. By the time all the hardware was added up, NeXT was the cheapest – "half the cost of the Mac," says Fain.

Fain expects that Preferred will have 700 NeXTstations installed by the end of the year. Already, the company's provider database is up and running on the new hardware. And Fain's position as one of the leading buyers of NeXT hardware has earned him a position on NeXT's Customer Advisory Board.

There are plans for more. Next year, Preferred intends to field two more custom applications. Then Fain's team will rewrite the provider application from scratch, recrafting it based upon the programmer's newfound knowledge of the NeXTSTEP operating environment.

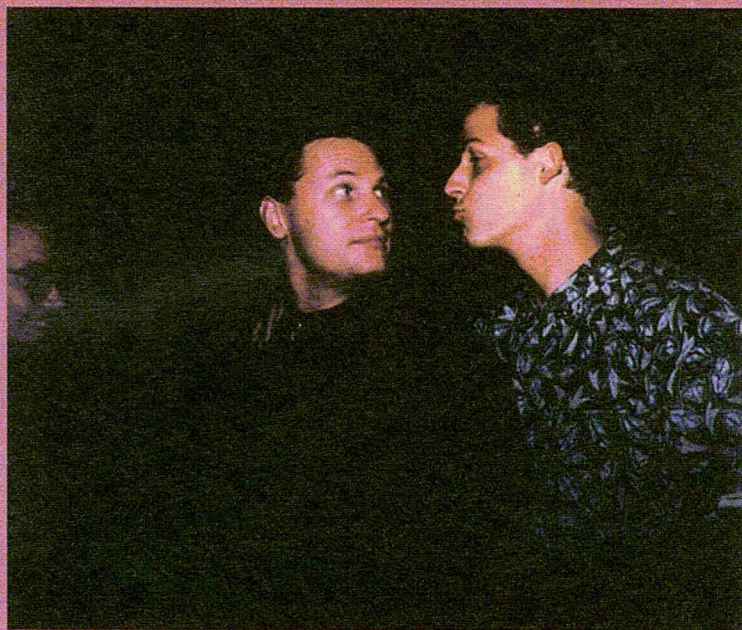
Just as the emphasis in health care today is to maintain wellness instead of merely treating sickness, Fain is confident that Preferred's up-front planning – and its NeXT prescription – will prevent emergency measures in the long run. ♦

by SIMSON L. GARFINKEL



IMAGE LAB

Rave On



Lt. Sullivan's miniature camera caught the NeXT cognescenti unaware during Stone Design's wild Seybold rave last September. Here, RightBrain Software President Glenn Reid shares a private moment with NeXTSTEP graphics guru Keith Ohlfs. Read Lt. Sullivan's Cube Confidential column monthly in *NeXTWORLD Extra*.



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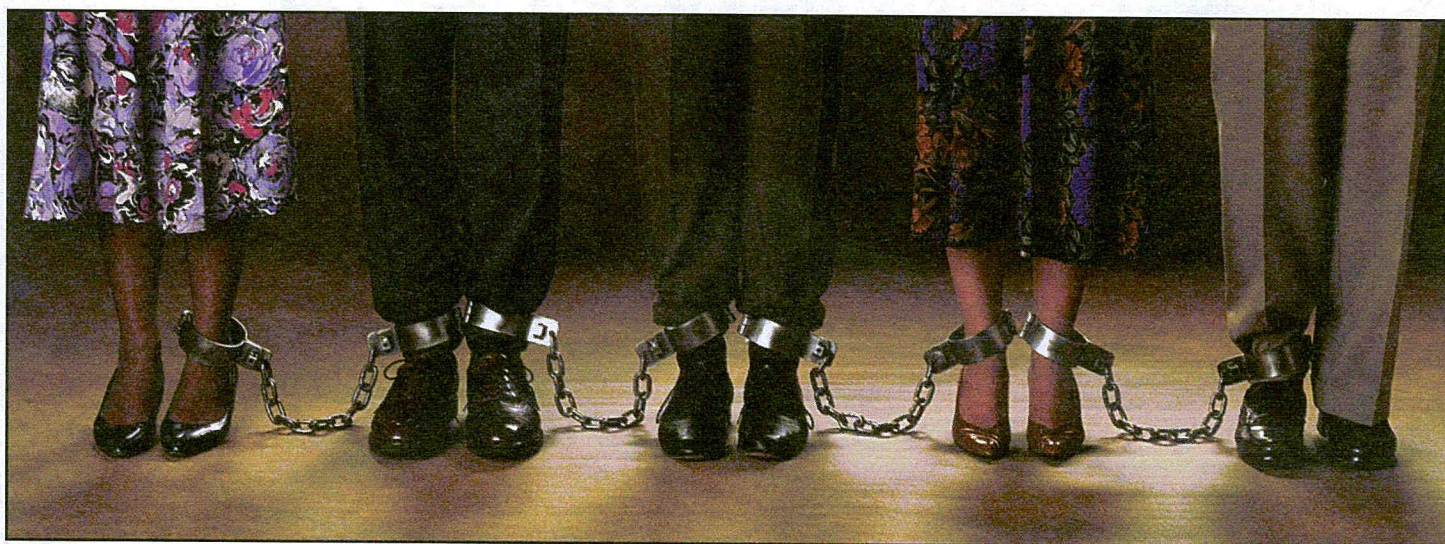
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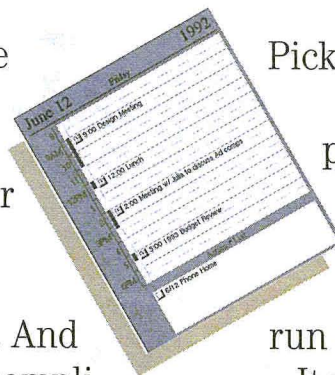
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Cowboy Capitalist in Moscow

MAKING MARKETS

Vladimir Bobrov was dumbstruck by the NeXT demonstration he saw at the CeBIT show in Hamburg early last year. "It was so amazing I lost my English for a few minutes," recalls Bobrov, who immediately vowed to get the technology into the offices of his employer: the Russian government.

Later at CeBIT, he and his boss, Vasily Kupriyanovsky, chairman of the Russian Council of Ministers' Bureau for Information Support, would sit down with a controversial American developer named Steve Sarich and make some big, if precarious, plans.

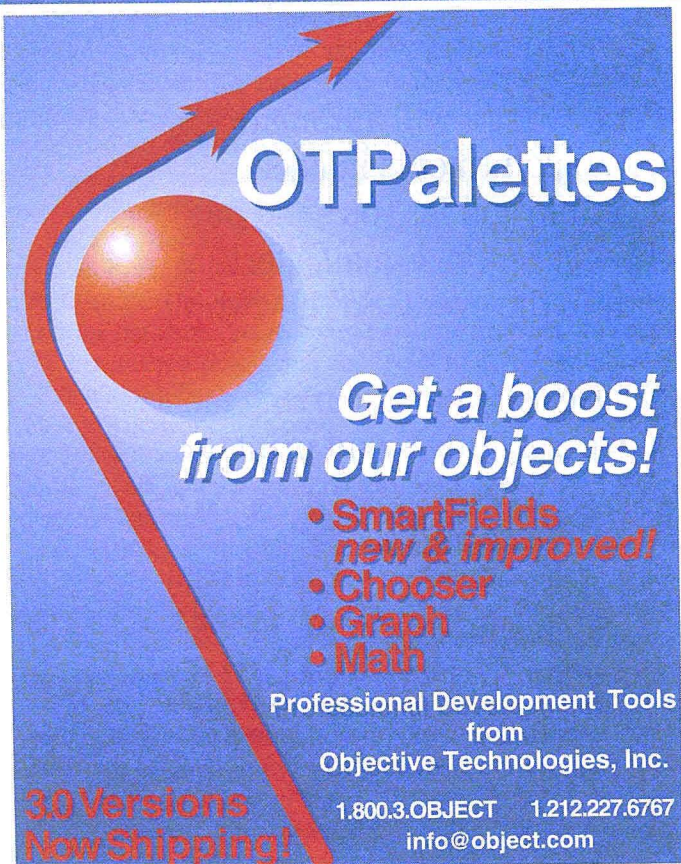
The trio, along with the Association of NeXTSTEP Developers International (ANDI), eventually convinced NeXT Germany to donate a NeXT machine to Russian President Boris Yeltsin's government; Sarich, president of Houston-based Talus Imaging, helped set a key project in motion at the Electronic and Computer Science Center (ECSC), operating out of the Moscow Institute of Physics and Technology, with the donation of two more NeXTs; and finally, in October, Sarich signed a deal with NeXT, making Talus the platform's first official distributor for the Commonwealth of Independent States (CIS) and Lithuania.

Doubts quickly surfaced, however. Yeltsin had received no computer six months after the agreement was signed, and there were questions about the status of the two ECSC machines. An acrimonious dispute broke out among ANDI board members. Russia's new private sector would be hard enough to crack without unnecessary delays on the American side, the Talus president's critics argued. For his part, Sarich blamed the holdup on U.S. Commerce Department restrictions, which he expected to be resolved soon.

It may be, however, that Sarich still holds the original trump card: the promise of the country's highest-profile showcase, the Kremlin itself. The distributorship negotiations with NeXT were opened at least in part because of a 200 user request for proposal to Sarich from Kupriyanovsky's office. And the American's chances at winning access to government market have been improved by the Cyrillic-alphabet interface with keycap support and specialized library he's introducing, the first of their kind on the NeXT

Meanwhile, Sarich's firm has an edge. The new machines offer warranties and support - will disadvantage other businesses. Sarich, a businessman from NeXTWORLD, Summer 1992, Morozov was Russian as stammering in Hamburg. A deal with NeXT, Moscow User Group; purchased two NeXT machines at the Expo in San Francisco. His business is a success story, but the British radio equipment company the English-language version of NeXT technology. Because NeXT technology is not on unsteady ground, it is actually getting their c

PHOTOGRAPH BY DAVID MAGNUSSEN



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C O M M U N I T Y

Meanwhile, Sarich's newfound authority with NeXT gives him an edge. The new Cyrillic interface – and Sarich's ability to offer warranties and support under his new NeXT contract – will disadvantage his main competitor in the CIS: Russian businessman Sergei Morozov (see "Technology Czar," *NeXTWORLD*, Summer 1992).

Morozov was Russia's first NeXT fan. By the time Bobrov was stammering in Hamburg and Sarich was trying to craft a deal with NeXT, Morozov had founded the Moscow NeXT User Group; purchased and imported two NeXTcubes and two NeXTdimensions; attended NeXTWORLD Expo in San Francisco; and, using profits from his business as a Philips peripherals distributor, set up his Nauka-Service office as the first NeXT showroom in Russia.

Morozov and partner Vladimir Sevrioukov have apparently already made sales to the Moscow office of British firm Laser Thesaurus, the music-studio equipment company EREM, and *Commersant*, the English-language weekly business magazine.

Because NeXT technology currently requires U.S. Department of Commerce export licenses, however, the two operators are on unsteady ground. They're cagey about how they're actually getting their computers, saying only that they're

working with an unnamed American company and insisting that the machines are imported legally – all the while telling you how badly they wish NeXT would sign them up as distributors.

Only the Talus president has the official go-ahead from NeXT, though. And go ahead Sarich will. Among his favorite projects outside the Kremlin is a NeXT software-development training center he's proposing as part of an International Science and Technology Center. The multinational program will be aimed at keeping former Soviet military scientists from taking jobs in hostile countries.

The ECSC project has already taken off. Within three months of receiving Sarich's donated NeXTs, ECSC director Oleg Batsukov and his team had ported their pVisor molecular-visualization program – the first NeXT program coming out of the CIS. Now the software is in beta testing in the United States and Germany.

Batsukov is optimistic about the future, promising that "in two years, the Moscow Institute of Physics and Technology will be known all over the world." As cowboy capitalism comes to Russia, it seems that NeXT will play a role in shaping that future. ♦

by CLAIR WHITMER and SALLY CHEW



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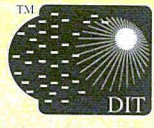
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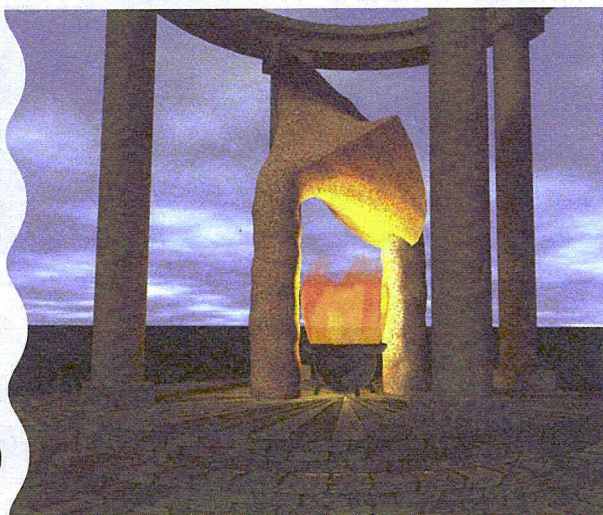


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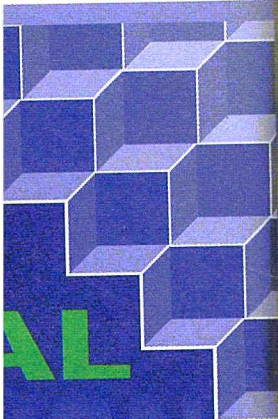


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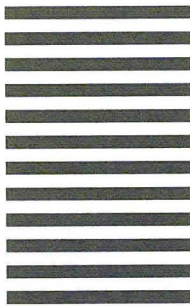
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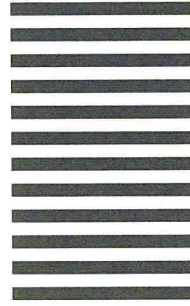


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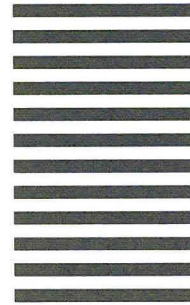


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NeXTSTEP, German-style

positioned itself as a professional, affordable PC (IBM, Macintosh, and UNIX machines are very expensive in Europe), allowing developers to introduce marketable products. But Atari never competed aggressively for office and publishing desktops in the global market, and German developers were left with only limited sales and programming challenges. Insularity bred contempt.

"Because Atari became so bad, German developers took a big leap to NeXT as the only real professional market in Europe," says Wilfried Beeck, president of d'ART Computersysteme GmbH, a Hamburg-based software developer and one of the two authorized German NeXT distributors.

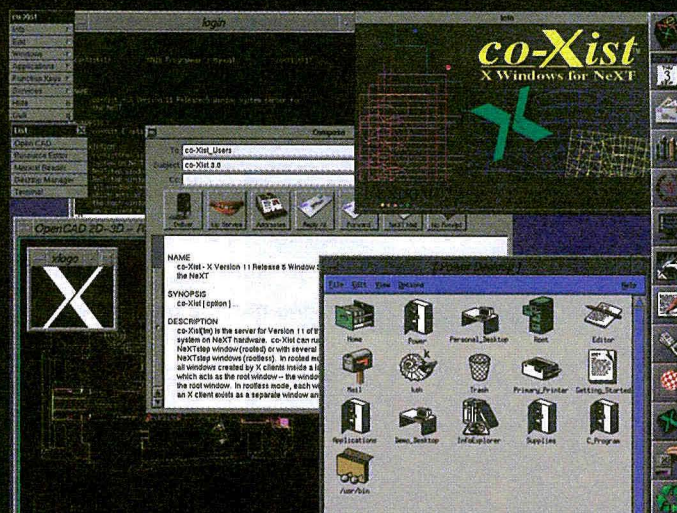
As excited as these developers are about following the lead of the European Community and competing on the continent, they are also watching the ripe U.S. market for sales and success. But that isn't so easy. "I have ten distributors in Europe," says Unter Ecker's Oliver Ecker. "I can't find a single one in the States." Beeck says that there is lots of "interesting development" in Europe, but U.S. users don't hear about it.

The developers' challenge now is to put the Atari experience behind them and get the word out about German NeXT software. With a little luck, the innovative programming touches and language support will turn American heads toward Europe for both collaboration and sales.

"We Germans like to pioneer," says Oliver Ecker. "But pioneers can get lonely."

by ELIOT BERGSON

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Circle 51 on reader service card

Publishing Splashdown

glamorous entry among UNIX platforms. Sun made strides, while Silicon Graphics threatens to steal NeXT's thunder as the hot platform for UNIX publishing.

That was the perception. The reality is more encouraging. Buoyed by breakthrough applications such as Altsys Virtuoso and Pages by Pages, a positive flood of Adobe Photoshop imitators, and a complete set of color prepress and output options, users at last have the tools to make use of NeXT's built-in advantages for imaging and workgroup publishing.

In fact, NeXT offers unique advantages to publishers in the precise areas in which they have topped out with tried-and-true approaches. Publishers need more powerful systems for image manipulation. They need an integrated environment for collaboration and workflow management. They need modular functionality that can be put together in user-specific custom apps. And they need breakthrough applications that advance the state of the art in page layout, illustration, and image processing.

In hindsight, it may have been the internecine battles over modu-

lar versus shrinkwrapped software that sapped the strength from NeXT's Seybold delivery. Actually, the much-debated NeXT Publishing Environment turned out to be a nonissue, as NeXT defused the controversy by broadening NPE to include all publishing-related applications.

While it may have been a blessing that the battle didn't flare up in public, the energy wasted on that topic early in the year meant that NeXT missed an opportunity to make a strong positive statement. Perhaps a bland message is better than a wrong message, but it still

leaves one wondering what might have been.

Behind the scenes, NeXT's sales force and third-party developers were more effective in courting customers. NeXT will still get its foot in the door based on the objective advantages of its hardware and software. It's just too bad that most customers will have to discover those advantages for themselves. ♦

by DAN RUBY



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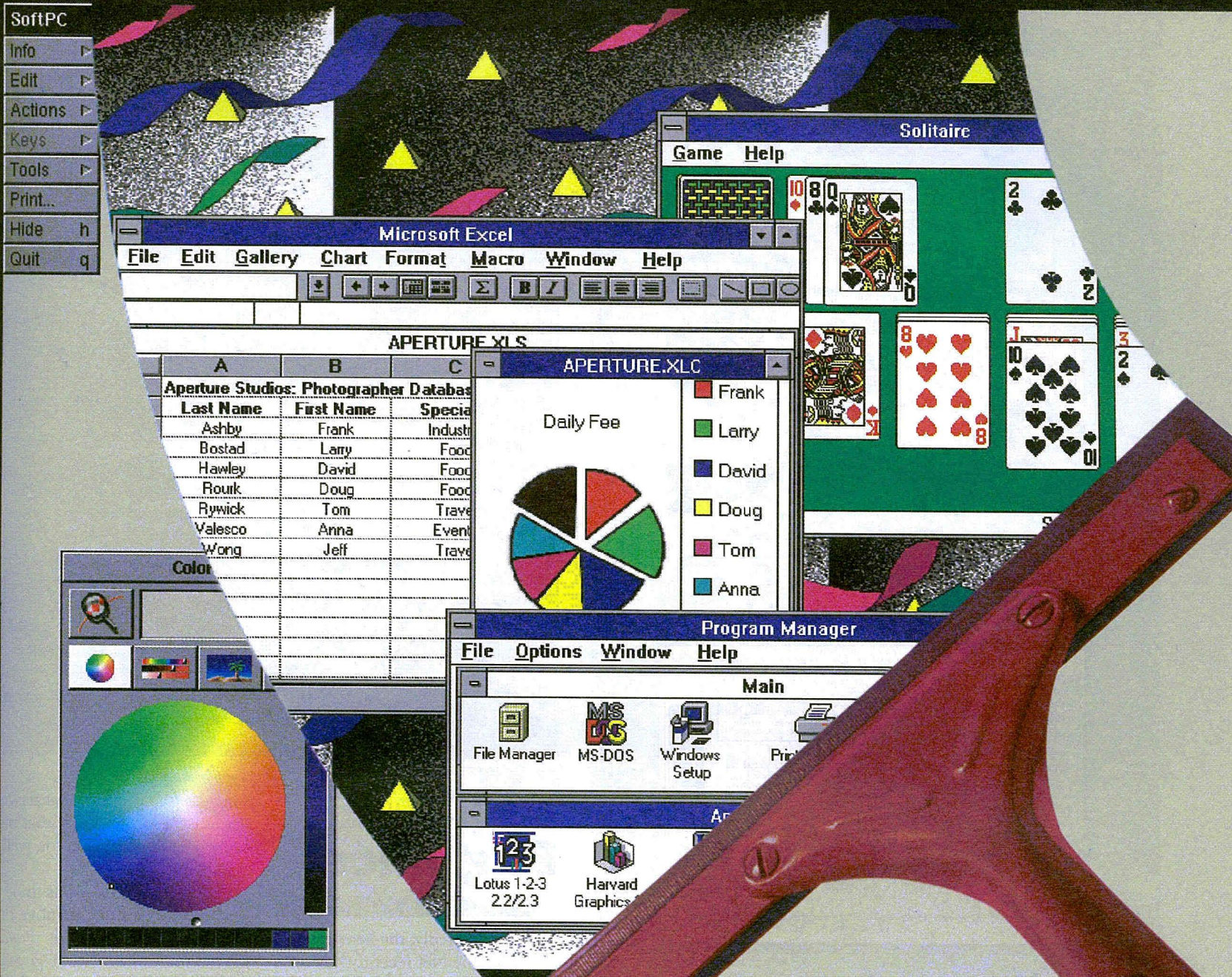


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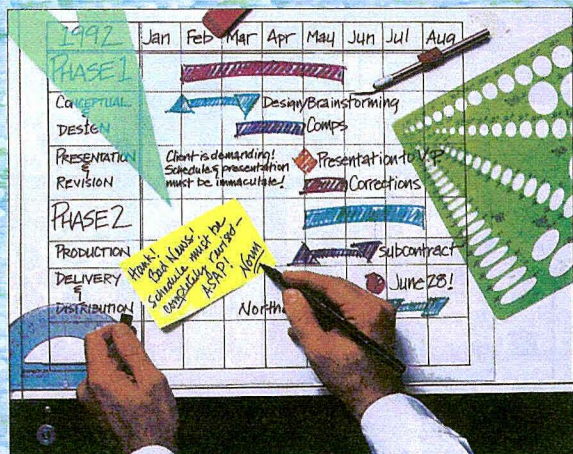


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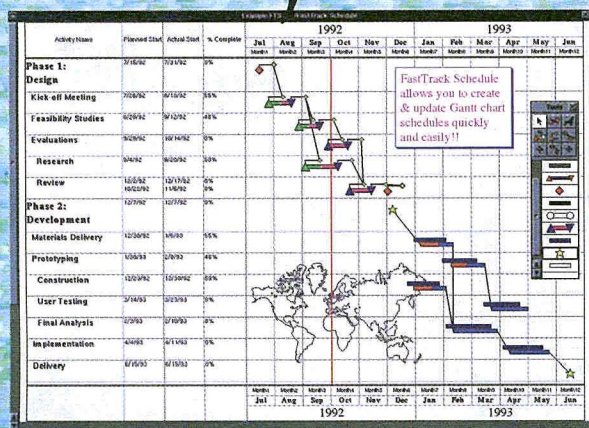
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Creative Funding

TIME CAPSULE

A few NeXTSTEP companies, such as Appsoft and Pages, received funding through traditional sources. Most others had to be creative when they went to the well.

Metrosoft At an investment seminar, cofounder Mary Donnelly showed the firm's business plan to a fellow attendee, from Guam, who got excited and agreed to invest proceeds of his recent land sale.

Lighthouse Design A team of developers quit their jobs, moved in together, lived on rice and beans for almost four years, and went without a payroll for a year and a half.

Ensuing Technologies Karl Kraft was writing an employee-scheduling program for Caesars Palace in Las Vegas when he was offered funding by a dealer in a baccarat pit.

Right Brain Software It subsisted on advance sales from a range of small products, then sold TouchType to Adobe. The company was profitable from the beginning.

Black Diamond While developing custom financial applications, Swiss Bank Corporation realized that other firms would pay for the technology. Black Diamond was spun off as a software company.

NeXT Funded out of Steve Jobs's pocket for two years until Carnegie Mellon, Stanford University, and Ross Perot began investing.

NeXTSTEP Bug Juice

ON THE NET

Not unexpectedly, the heaviest traffic on the Net recently has been first reports from people all over the world installing NeXTSTEP 3.0. These postings, which ranged from complaints about the OD and the loss of features to reports about the continual small glitches discovered in the shipping version, are perhaps best summarized in the thread "Re: Man - Another Bug in 3.0?"

The great number of these problems, small and large, should be of concern to NeXT. Several corporate users have opted not to run 3.0 until it "becomes more stable" and there are rumors that portions of the system may have accidentally shipped with older versions of some software; one person noticed that a bug fixed in a prerelease was broken again in the final 3.0.

Developers are also howling

over the loss of Icon, that flawed demonstration program that many had come to rely upon for, well, developing icons.

The consensus seems to be that NeXT had better move fast to repair the deficiencies. Posters agreed that unless NeXT gives a high priority to fixing even minor problems, the powerful and exciting features that have been added to NeXTSTEP with Release 3.0 will be diminished. It isn't wise for NeXT to quietly patch what should be grouped together as a sizable set of changes and be called NeXTSTEP 3.1. We could wind up with a "3.0 Patches" CD-ROM - an embarrassing prospect.

What we need is a few quick fixes and then a solid 3.1. NeXT should also learn a lesson for future releases. Supporters waited long enough for 3.0 and wouldn't have minded an extra delay to triple-check everything. ♦

by CHARLES PERKINS

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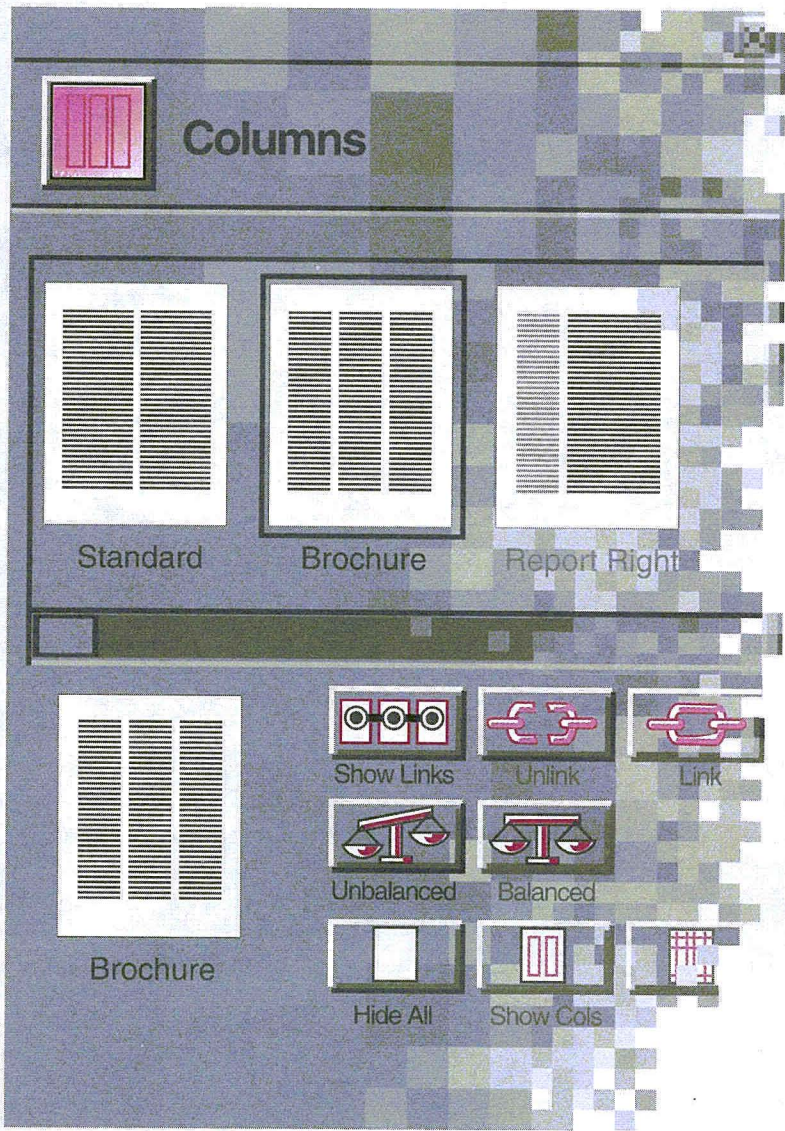
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The Seybold Report on Desktop Publishing 11/2/92

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Bove & Rhodes INSIDERREPORT 10/1992

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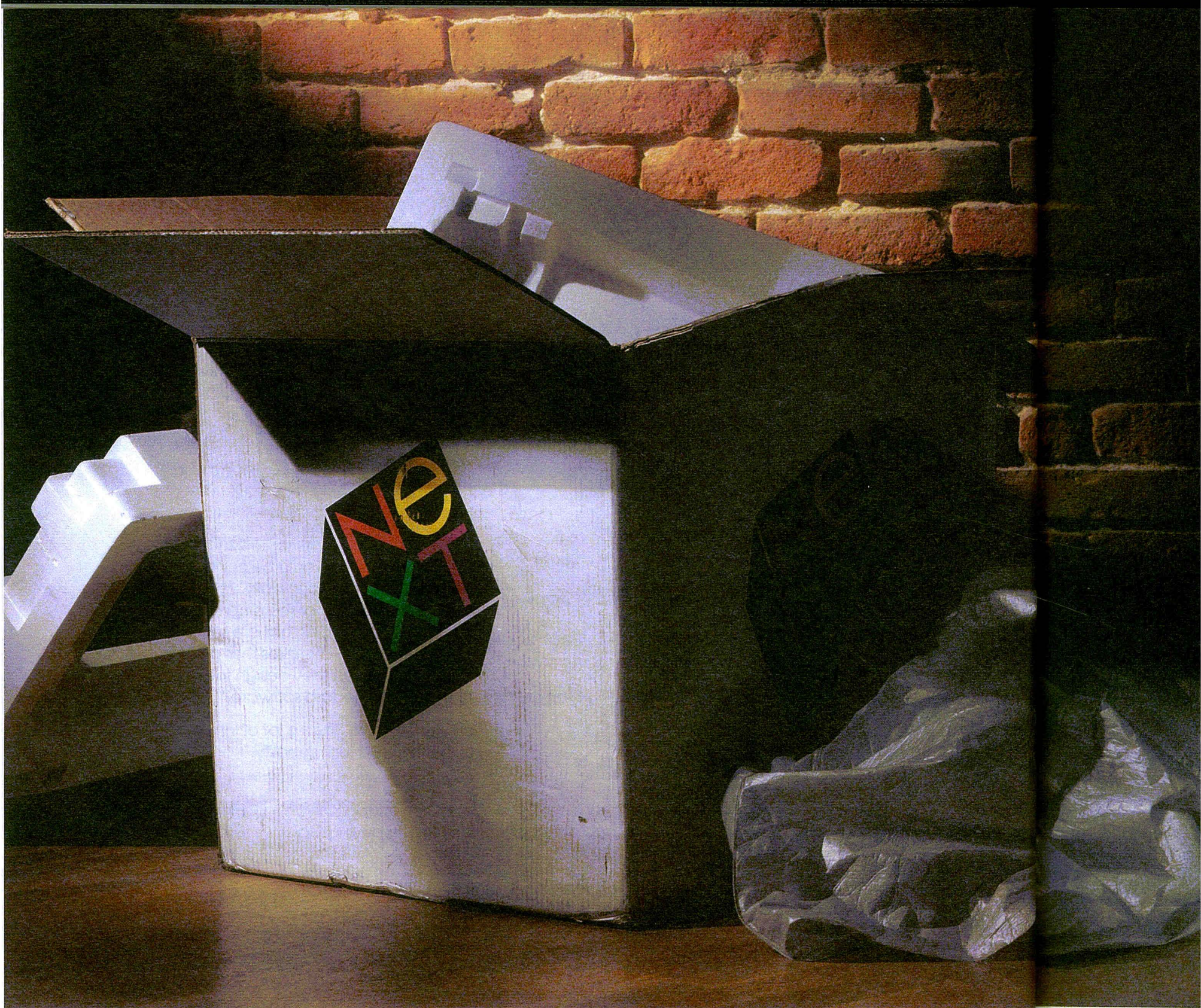
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DATA DASHBOARDS

For building applications that connect to industrial-strength servers, it's what's up front that counts

by DANIEL MILES KEHOE

Pick your buzzword: Client-server computing. Enterprise computing. Distributed databases. Rightsizing. At NeXT, the au courant phrase is "operational productivity."

It is an article of faith today that the best way to manage information resources is with centralized databases residing on networked servers and client applications manipulating the data from desktop computers. Gone are the days of mainframes and drone terminals; equally passé is the notion of managing organizational data on stand-alone or networked personal computers.

Client-server computing provides security, reliability, and flexibility by splitting applications into two parts: front-end client programs on local workstations, which interact with the user; and a back-end application server on a central computer that manages data, processing requests from clients, and returning manageable sets of data across the network. Client-database applications make requests of data servers in Structured Query Language (SQL, often pronounced "sequel"). The lingua franca of client applications and servers from many vendors, SQL makes shared data possible. Servers may store data in peculiar file formats and know nothing of a client application, but they will respond to a SQL request by returning data to the client.

NeXT endorses this model with support for SQL servers such as Oracle and Sybase. The central hardware platform may be a specialized database server like the Sequent Symmetry, Pyramid MIServer, or Sun SPARCserver 690MP – or (in smaller companies) it may be a workstation like the Data General AViiON, IBM RS/6000, or NeXTstation. On the client side, built-in networking makes NeXTSTEP ideal for connections to shared databases.

In Part I of this report on the NeXT database market, *NeXTWORLD* surveys client applications that speak SQL and connect to database servers. We will explore the world of database servers in Part II of this report in a future issue.

Databases defined

Computers may be data machines, but it takes database software to organize data. Flat-file database applications, such as Stone Design's Data-Phile or Teledia's FileMaster, structure data in a single table, much like the rows and columns of a spreadsheet. The system is fine for simple lists and is easy to maintain, but as soon as one record has data that doesn't fit (a person with two phone numbers, for example, while all other records have only one), the single-table structure becomes cumbersome. A relational database management system (RDBMS) allows the use of multiple tables. Names and customer IDs may form one table; phone num-

bers and customer IDs a second; and shipping addresses, billing addresses, and customer IDs yet another. When data is needed, relational tables are joined by a common key (the customer ID in our example). Tables can be kept to a manageable size and more closely resemble the unevenly structured real world.

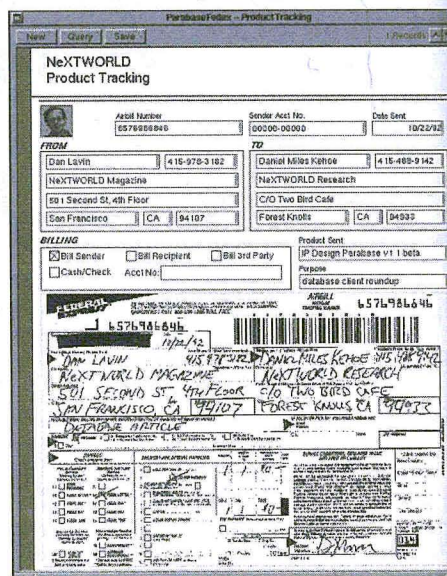
An object-oriented database management system (ODBMS) can model the real world even better. But there are no tables in an ODBMS; instead, containers hold objects comprised of data and behaviors. Right now, relational-database applications are easier to implement, because ready-made RDBMS development environments are available, and perhaps because contemporary computer users find it easier to think of the world in terms of tables rather than taxonomies. For now, ODBMS clients must be custom-built by programmers. (*NeXTWORLD* will cover ODBMS development in a future issue.)

Overlapping categories of database software also add to the confusion. A PC product like Borland's Paradox is colloquially a "database," though it is really a software package that is used to build database applications. It comes packaged with its own relational database engine, a simple database-programming language, and data-entry and reporting forms-generation tools. In the world of SQL databases, each of these functions is often sold as a separate product: a server, a fourth-generation programming language (4GL), an application generator, a screen painter, and query or reporting tools.

There is no application like Paradox for NeXTSTEP. Only the combination of a third-party SQL server, NeXT's DBKit and third-party objects, and Objective-C can be compared to Paradox – though the comparison is that of a construction project with a Lego set.

Right tool for the job

As the "Database clients" table shows, you'll need more than one application to round out a NeXTSTEP database man-



Parabase's well-rounded forms can include images as data.



OTProvide melds with data for spreadsheet an-

Stand-alone applic: SQL databases. Or you data entry, reporting, and NeXT's DBKit and its applications, which vary industries, you will that your DBMS must to fit your particular b is to deliver gains in c productivity.

Application design

Many NeXT customers to build applications for DBMS records. Although can build simple applicati ticated database-client a using DBKit require Obj you're ready to tackle pr with the DBKit, see th "Approaches for Progr Don't abandon hope if are beyond you. A NeX the forthcoming Propon custom DBMS with no j Wings"). At their best, t database, but they tap t tional-database servers.

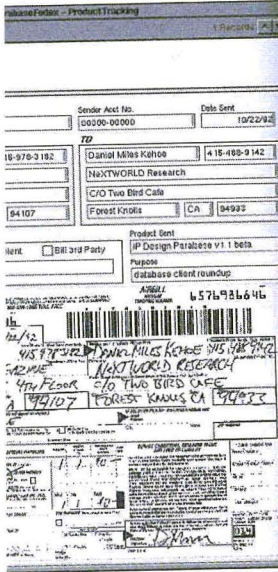
Parabase, \$695 from SQL server, that you nee sion of Parabase is used deployed among users v database application, us SQL server and design a name and descriptive titl you'll save it, storing a g system and automaticall (each data-entry field co form and you are ready i can output database rec using a report-layout pa mmary data for aggregate

Parabase's strong sui system-administration to in the form of fixed-leng date, check boxes, graph applications possible), an

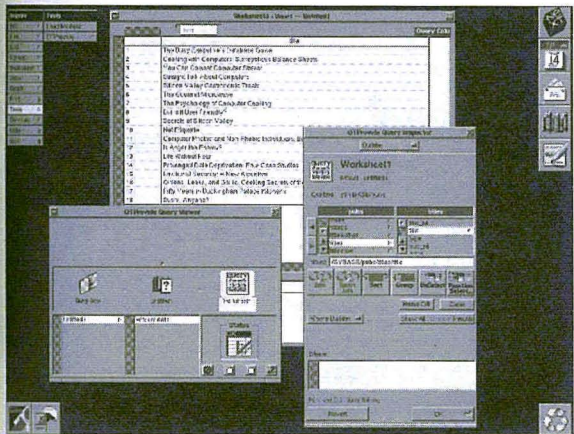
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resses, billing addresses, led, relational tables are example). Tables can be able the unevenly struc-

stem (ODBMS) can o tables in an ODBMS; ta and behaviors. Right tional-database applica- easier to implement, bel- ly-made RDBMS devel- environments are available, aps because contempo- puter users find it easier of the world in terms of her than taxonomies. For DBMS clients must be cus- by programmers. (NeXT-) will cover ODBMS nent in a future issue.) rlapping categories of software also add to the n. A PC product like 's Paradox is colloquially ase," though it is really re package that is used ed with its own relational ing language, and data- 1 the world of SQL data- separate product: a server,



l-rounded forms can as data.



OTProvide melds with Lotus Improv to retrieve SQL data for spreadsheet analysis.

Stand-alone applications designed for your industry may connect to SQL databases. Or you may decide to build your own DBMS clients for data entry, reporting, and analysis, using a database-shell application or NeXT's DBKit and its add-ons. Unlike word-processing or page-layout applications, which vary little across industries, you will likely find that your DBMS must be tailored to fit your particular business, if it is to deliver gains in operational productivity.

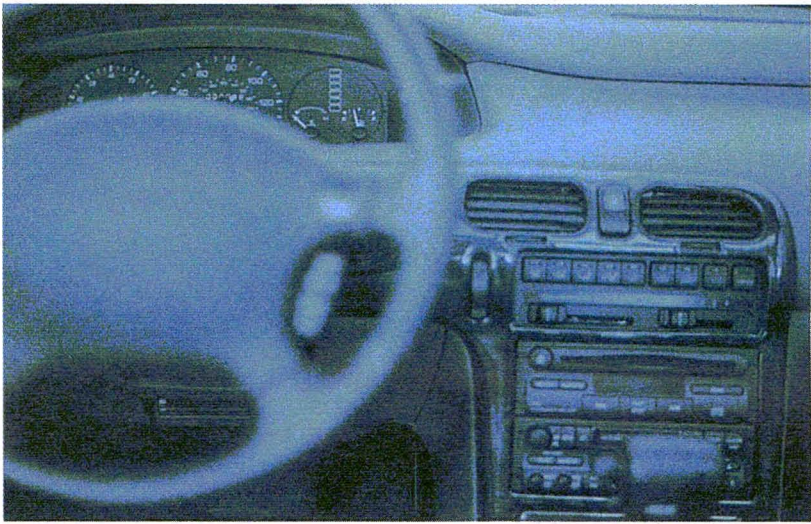
Application design

Many NeXT customers use DBKit to build applications for accessing DBMS records. Although novices can build simple applications, sophisticated database-client applications using DBKit require Objective-C. (If you're ready to tackle programming with the DBKit, see the sidebar, "Approaches for Programmers.") Don't abandon hope if C and SQL are beyond you. A NeXTSTEP package such as IP Design's Parabase or the forthcoming Proponent from Proponent can get you up and running a custom DBMS with no programming (see the sidebar, "Proponent in the Wings"). At their best, these programs can be as easy to use as a flat-file database, but they tap the shared data of industrial-strength SQL relational-database servers.

Parabase, \$695 from IP Design, provides everything, except for the SQL server, that you need to build a database application. The \$695 version of Parabase is used to design forms; \$349 run-time licenses can be deployed among users who do not need to modify designs. To build a database application, use Parabase to create an empty database on the SQL server and design a form, pulling fields off a palette and assigning a name and descriptive title to each field. As soon as the form is designed, you'll save it, storing a graphical description of the form in the UNIX file system and automatically creating the first table in your new database (each data-entry field corresponds to a column in the table). Open the form and you are ready to enter data and query for specific records. You can output database records as reports by graphically building a form, using a report-layout panel to specify a sort order for records and summary data for aggregate groups.

Parabase's strong suit lies in its flexible forms and its basic database system-administration tools. Fields in your database can contain data in the form of fixed-length text, variable-length text, numbers, time and date, check boxes, graphics, whole files (making document-archiving applications possible), and an "electronic signature" field type that is used

agement system (DBMS). In addition to SQL servers such as Sybase or Oracle, you'll need applications for data entry and reporting, database-administration tools, and, perhaps, database-engineering aids. Also, users may ask for utilities to link analysis tools, such as spreadsheet applications, to databases.



to build applications with password-protected authorization of documents. One of Parabase's sample databases uses a scanned Federal Express form for a freight-tracking system, combining invisible fields and a background image. Validation of user-entered data can be specific to each field, and field data can be calculated from other fields (this requires acquaintance with SQL "select" statements - though the statements can be created from a point-and-click editor). Table-based pick lists, combined with scripts triggered by buttons or custom menu items, flesh out a custom app.

Parabase handles enough database system administration to get any SQL-based application up and running. Point-and-click tools add and delete user accounts and modify permissions. Databases can be added or dropped, dedicated storage space can be increased, and disk mirroring or backup can be configured in one step. You'll need SQL skills or a stand-alone database-administration tool for more advanced operations.

Parabase accommodates the relational-database model, albeit with some limitations. A single form can employ fields from more than one database table, as long as a field common to both tables is present. But Parabase 1.1 can't handle a common expression of a one-to-many relationship - cases in which a single form shows a single record from one table and multiple records from another (sometimes called a "master detail" form). In the real world, you might need an invoice that accom-

modates a variable number of line items. IP Design plans to incorporate this feature as "multirecord blocks" in Parabase 2.0. In its favor, Parabase automatically maintains the referential integrity of the database.

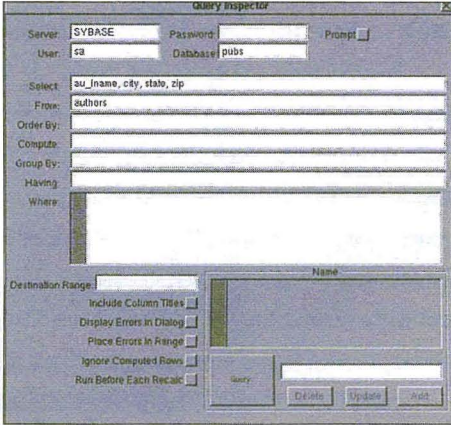
If you're using Parabase to build a NeXTSTEP shell around an existing SQL database, you'll drop pre-existing tables and fields onto database forms. In fact, it may take only ten minutes to duplicate a character-based data-entry screen used on another platform. Migration from a PC- or Macintosh-based DBMS, however, may not be as easy. The version we

reviewed imported only comma-and-quote delimited text files, though IP Design has plans to improve the flexibility of importing and exporting. Despite some limits, Parabase will be a godsend for many users, especially those who want to quickly build a database application around a SQL server without learning programming.

Spreadsheets as clients

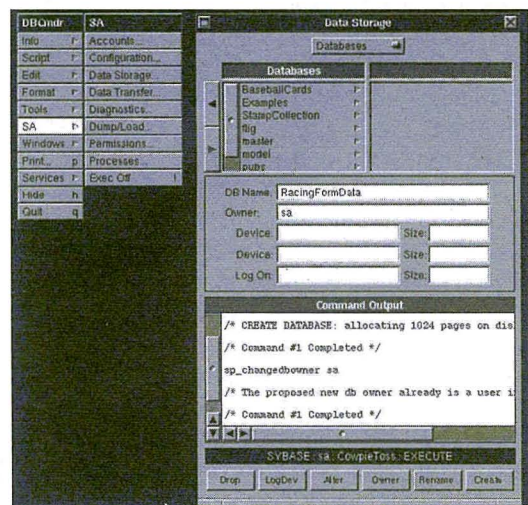
Instead of building your own custom application, you can use a standard spreadsheet as a database front end. After all, the basic component of a relational database is a table, and spreadsheets are fancy tables. Put the two together, and you've got an intuitive database application. There's just one missing ingredient - a way to transfer data to a spreadsheet from a SQL server. Two utilities, OTProvide for Sybase and Lotus Improv, and DataLink for Oracle and Wingz, forge the link.

OTProvide, \$850 for a single user with floating license, is a model NeXTSTEP application. Objective Technologies's product attaches to Improv and manifests as another set of Improv menus, allowing you to



Mesa's Query Inspector fetches data for Athena Design's spreadsheets.

log onto a SQL server and open an inspector panel that displays all resident databases, tables in databases, and columns in tables. You won't see actual data until you click buttons to select columns and specify details of your database query, saving the instructions to a query file that you can recall or share with others. Execute the query and watch an empty Improv



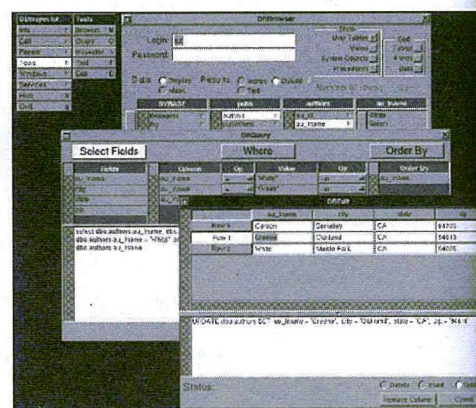
DBCommander easily creates or drops databases, displaying its SQL output.

only a double-click away. Nonetheless, we can't fault the functionality of OTProvide in combining the power of Improv and SQL databases.

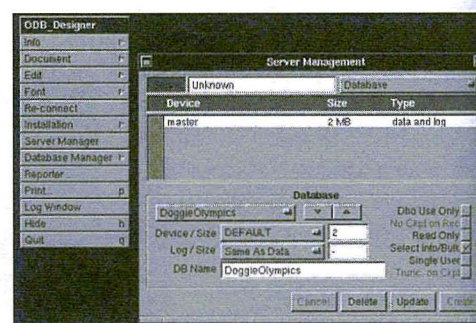
DataLink for Oracle, \$500 from Fusion Systems Group, links Informix Wingz spreadsheets to Oracle databases. Wingz's strong suit is its HyperScript programming language. Unlike macro functions in PC spreadsheets like Lotus 1-2-3 or Microsoft Excel, HyperScript is a full-featured procedural programming language, powerful enough to build decision support or executive-

information systems.

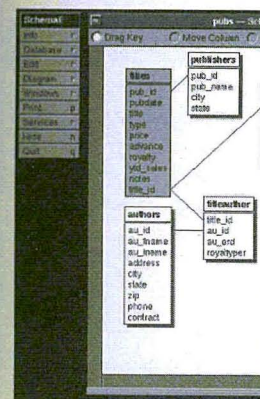
DataLink is nothing more than a third-party HyperScript routine that adds database-access menus to Wingz and new functions to HyperScript. Placing the DataLink files in your Wingz folders creates a version of Wingz with menus for logging onto Oracle servers, selecting tables, specifying criteria for retrieving data, and copying columns of data into columns of the spreadsheet. By itself, it's convenient, but if you're handy with HyperScript, your imagination will soar. You could easily write your own HyperScript routine to log onto a server, retrieve data from a table, and then graph the results. In fact, since HyperScript lets you create dialog boxes, a prompt could ask the user how recent the data should be and offer a choice of graph types (Wingz's other strength is more than 25 different charting choices). Fusion Systems has a version of DataLink for Sybase in beta; Wingz also directly supports Informix's own Informix-SE SQL server,



DBInspector provides a point-and-click interface for retrieving and editing data



Objective DB Designer can add and drop data-bases and generate documentation.



SchemaE displays data

Inspector, which has fill-server and database. Th and specifies a range of data. It's possible to save ifications for reuse. You' how to construct a SQL ment, but SQL queryir extra for Mesa users. (M elsewhere in this iss WORLD.) The App spreadsheet, scheduled t in January, also support according to the compa

Database tools and

Although SQL data designed and maintaine the UNIX terminal win a crowd of NeXTSTEP administrative utilities, engineering tool. If you' these products can be a confining SQL comman learning curve.

DBCommander, \$2 administration utility. It mands, including all the are eight main panels fo of server and database c management; data impc consistency verification sion controls; server sta Few database managers tive matters need attentio hope one has entered an mand line. DBCommam denly been assigned data thorough, if daunting, ir

DBInspector, \$349 i query-and-update tool. " the NeXTSTEP File Vie tables, columns, and the opens the DBEdit panel, table, allowing entry of ing a column name or d in which one specifies th DBEdit panel, where the a text window or an emj Query panels show the S

PROONENT IN THE WINGS

At Swiss Bank Corporation (SBC), the database-applica- tion development environment of choice is neither NeXT's DBKit nor IP Design's Parabase. SBC is using Proponent, an application from a company of the same name.

"Proponent can handle the full life cycle of defining and building our databases," says Jeff Kvam, head of SBC's NeXTSTEP office-automation project.

Proponent extends the familiar metaphor of the spread- sheet to represent databases. In comparison, the form is the interface metaphor for Parabase; query tools such as Sql- Buddy or DBInspector use a combination of NeXTSTEP browsers and inspectors; and SchemaE represents databases diagram- matically. Arguably, Proponent's spreadsheet approach offers no inherent advantage, but in the prerelease version that SBC uses, Kvam says Proponent offers genuine advantages.

"We found that Proponent can handle more complex prob- lem sets. Our applications use multiple joins, a variety of tables, and tons of one-to-many, or even one-to-many-to-many relationships," says Kvam. He claims that Proponent easily accommodates relational complexities, including the prototyp- ical example of an invoice with a varying number of line items.

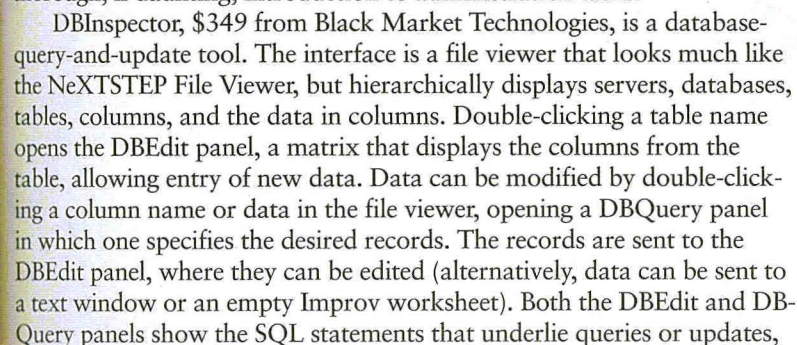
More importantly, says Kvam, design of a Proponent application begins with legacy data, not a blank form.

"We're working with real data from the start, so we talk with users about ways to organize the data, not make pretty forms. It helps that using Proponent is a quick, iterative process. A man- ager who understands a business problem can sit down with our database expert and together they'll design an application, often in an afternoon," says Kvam.

"That's very different from typical database programming, where a programmer who doesn't know anything about inven- tory tracking, for example, comes back three months later with an application that doesn't fit the user's needs," Kvam says, adding that Proponent's architecture simplifies adapting applica- tions as needs change.

For now, Proponent is available only to select customers.

"We'd love to see everyone using it, but we're going to take the time to get it right," says Bob Beth, president of Proponent. "Industrial-strength databases are a complex problem space and the software can require a lot of support, so we want to be sure we're ready when the time comes." Beth declined to say when the product would be generally available.



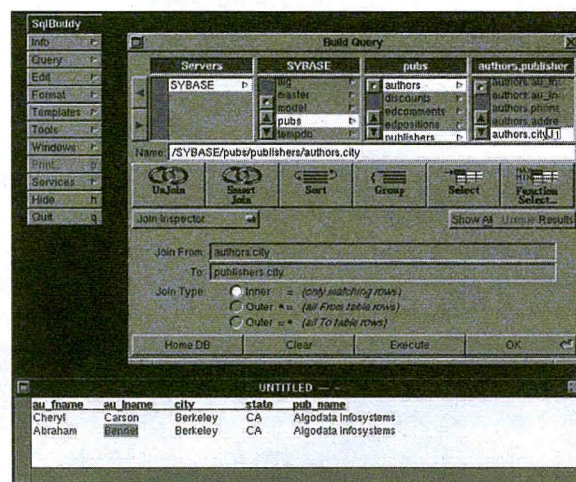
Mesa, \$499 (\$99 educational) from Athena Design, is a spreadsheet application that includes rudimentary SQL-query capabilities. A database menu includes a Query



Objective DB Designer, free with the purchase of the \$995 Objective DB Toolkit from Professional Software, is intended for database engineering and administration. Three windows serve as control panels for server administration, database administration, and documentation of database design. Server administration runs the gamut from basic (adding and deleting databases) to advanced (expanding data-storage allocation, setting backup and disk mirroring, and configuring parameters in the Sybase master database). The structure of databases can be displayed and edited using an Inspector-like panel, allowing changes to table structure (including column data types and size), stored procedures, data-entry defaults and validation rules, and more. After one has made extensive engineering changes to a database, Objective DB Designer handily generates documentation either as easily readable reports or as SQL source code that can be used to recreate a database. The Objective DB Designer interface is a combination of inspectors and scrollable lists, and while we would have

SchemaE, \$2500 from Schema Research Corporation, is billed as a database-engineering tool, a NeXTSTEP version of the pencil-and-paper planning aids or computer-aided software and engineering (CASE) tools of salaried database managers. The rationale for tools

such as these is irreproachable. Corporate databases may contain hundreds of tables and thousands of columns. In order to maintain relational efficiency and referential integrity, data must be normalized. Key columns must match, data must not be duplicated, and relationships between data entities must be explicit.



SqlBuddy performs complex queries across databases.

tion back to the server for on-going reference and maintenance. We liked it because its click-and-drag graphical representation of SQL databases showed us the structure of our DBMS better than any other product in this roundup. We were able to quickly add and drop tables; add and drop columns; move columns; and copy columns, preserving data types and

other attributes. We assigned primary keys and drew lines representing data relationships. Unfortunately, that's all we could do in the current version of SchemaE. It would be more useful if it also contained the administrative functionality of DBCommander or the querying power of a program like DBInspector.

SqlBuddy, \$499 for a single user with floating license, is another Objective Technologies product and solely a database-query tool – allowing peeking but not tweaking. A Build Query panel is SqlBuddy's main window, allowing an unschooled user to select tables in databases. A click of the Execute button retrieves data, opening a text window that has the contents of the database table neatly displayed. The results can be saved in a text or RTF file. You can narrow a query in the Build Query panel, defining SQL "where" clauses by pointing and clicking, specifying sort orders, requesting unique results, aggregating data for summaries, and retrieving data from multiple tables (SQL "joins," which the on-line manual handily demystifies). A Query Inspector shows the SQL commands generated by the Build Query panel and allows editing of queries, including common administrative and query operations provided by SqlBuddy as prebuilt templates. We liked the interface but judged the overall utility of SqlBuddy limited, since it does not connect to analysis applications or allow data updating. SqlBuddy is a compact and handy can opener for databases, but at heart it's no more than a tool that eliminates the typing of SQL commands.

Stand-alone applications

Would you love to put SQL data to work without the expense of building a custom application? There is a wealth of NeXTSTEP applications that connect to SQL databases (the "Stand-alone applications" table provides a sample). Some applications can be used in any industry, like Megatel



GmbH's FLIG, a system for combining geographic data with maps. Other applications are more specialized, like Leading Market Technologies's EXPO worksheet, for analyses of financial time-series data. Some accounting packages are particularly suited to use of shared data – Datrix is shipping accounts-receivable and general-ledger software, with more applications coming from other vendors. Indeed, with the NeXT's DBKit simplifying connections to SQL servers, there may soon be more NeXTSTEP applications sharing data than not.

A workbench for data

It's inescapable that databases under NeXTSTEP require more work and more tools than the typical database applications on PCs or Macs. NeXTSTEP's advantage is the pooling of SQL-accessible data throughout an organization, with no limits to database growth – in a phrase, industrial-strength applications. If your company's operational productivity requires client-server databases, you'll likely assign a team to program one or more custom front ends. For the person who oversees your databases, we'd recommend DBCommander or Objective DB Designer as administrative tools. Skilled users are likely to appreciate DBInspector for ad hoc querying and data updates. And Parabase is great for quick, uncomplicated database applications that users can build themselves. Though none of the reviewed products is fully mature, they all show promise, and the time is ripe for building a database-development workbench. ♦

DANIEL MILES KEHOE is a NeXTWORLD contributing editor. His report on database servers will appear in a future issue.

APPROACHES FOR PROGRAMMERS

Your most productive database application will be the one you build yourself. You'll have full access to the entire NeXTSTEP environment – unlike working on another platform with a 4GL, a high-level language designed for databases but which restricts access to the rest of your computer. NeXT's DBKit provides three essential ingredients: adapters that link the DBKit to external servers; an access layer that presents a uniform application programming interface (API) for all adapters, allowing programmers to maintain portability of applications among servers from various vendors; and a palette of Interface Builder objects, such as a database file viewer and an image-displaying object. Although you'll likely write to the access layer API, you'll probably supplement NeXT's own DBKit palette with objects from third-party vendors or develop your own interface objects.

Frontier's DBKit Companion Objects and spreadsheet matrices from Black Market Technologies are examples of third-

party objects that can be used for database-application development in Interface Builder, though you'll use plenty of your own Objective-C in your application. Alternatively, if you know SQL but aren't comfortable with a lot of C, check out Professional Software's Objective DB Toolkit. It's a C-free substitute for NeXT's DBKit for the experienced SQL programmer.

If you've caught the object-oriented bug, VNP Software's AccessKit layers on top of NeXT's DBKit, mapping the traits of your own Objective-C classes directly to relational-database columns and tables. The product lets you build object-oriented applications directly on top of an existing RDBMS. Or you may want to start developing applications based on ODBMS technology from Versant Object Technology, Object Design, BKS Software, or Persistent Data Systems (NeXTWORLD will cover ODBMS development in a future issue).

Whatever your approach, you'll get there faster with NeXTSTEP.

DATABASE CLIENT

SHELL APPLICATION
Parabase 1.1

SPREADSHEET LINKS
OTProvide 1.2

DataLink for Oracle
Version 1.3

SPREADSHEET
Mesa 1.1

**ADMINISTRATION/
ENGINEERING UTILITIES**
DBCommander 1.01

DBInspector 2.0

Objective
DB Designer 1.0

SchemaE 1.0

SqlBuddy 1.0.1

STAND-ALONE AP

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updates. And Parabase is
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DATABASE CLIENTS						
	SERVER(S)	RATING	COMMENTS	LIST PRICE	ADDRESS	
SHELL APPLICATION Parabase 1.1	Sybase and Oracle	◆ ◆ ◆ ◆ (beta)	The only NeXTSTEP software that builds SQL database applications without programming. Despite a few missing pieces, it's easy to use and constructs quite elaborate applications.	\$695	IP Design, 201 Wilshire Blvd., Santa Monica, CA 90401. 310/394-1820, 310/393-7245 fax; e-mail: info@ipdesign.com	
SPREADSHEET LINKS OTProvide 1.2	Sybase	◆ ◆ ◆	Turns Improv models into powerful SQL applications, though OTProvide doesn't allow data entry or updating.	\$499 (one machine); \$850 (one user, floating license)	Objective Technologies, 7 Dey St. #1502, New York, NY 10007. 212/227-6767, 800/362-5328; 212/227-3567 fax; e-mail: info@object.com	
DataLink for Oracle Version 1.3	Oracle	◆ ◆ ◆	Turns Wingz spreadsheets into powerful SQL applications.	\$500	Fusion Systems Group, 225 Broadway, 24th Fl., New York, NY 10007. 212/285-8001, 212/285-8705 fax; e-mail: info@fsg.com	
SPREADSHEET Mesa 1.1	Sybase (All DBKit servers to be supported in Version 1.3)	◆ ◆ ◆ ◆	Mesa connects directly to databases through a primitive interface but requires familiarity with SQL. (The cube rating here applies to the entire application, as reviewed elsewhere in this issue.)	\$499	Athena Design, 17 Saint Mary's Ct., Boston, MA 02146. 617/734-6372, 617/734-1130 fax; e-mail: info@athena.com	
ADMINISTRATION/ENGINEERING UTILITIES DBCommander 1.01	Sybase	◆ ◆	Distinguished by a reasonable price and comprehensive administrative panels, DBCommander needs a graphical make-over to become an attractive NeXTSTEP product.	\$250	DBSA, 1525 Los Pueblos Rd., Los Alamos, NM 87544. 505/662-5619, 505/662-9944 fax; email: info@dbsa.com	
DBInspector 2.0	Sybase	◆ ◆ ◆	A point-and-click query builder with a less-than-intuitive interface, DBInspector satisfactorily retrieves and updates data.	\$349	Black Market Technologies, 501 Hicks St. #307, Brooklyn, NY 11231. 718/522-5090; 415/474-7896 fax; e-mail: info@bmt.gun.com	
Objective DB Designer 1.0	Sybase	◆ ◆	Intended for database administration and documentation, this utility is cluttered but useful.	Free with Objective DB Toolkit	Professional Software, 599 North Ave. #7, Wakefield, MA 01880. 617/246-2425, 617/246-1443 fax; e-mail: psi@logibec.com	
SchemaE 1.0	Sybase	◆ ◆ ◆ (beta)	It does little but does it well. The interface is elegant and the price may be acceptable when there are large databases to design.	\$2500	Schema Research Corporation, 460 Seaport Ct. #202, Redwood City, CA 94063. 415/368-8477; 206/783-4762; 415/368-8479 fax; e-mail: products@LSC.com	
SqlBuddy 1.0.1	Sybase	◆ ◆	Without an ability to update data on its own, SqlBuddy is graced by an attractive interface and limited utility.	\$179 (one machine); \$499 (one user, floating license)	Objective Technologies, 7 Dey St. #1502, New York, NY 10007. 212/227-6767, 800/362-5328, 212/227-3567 fax; e-mail: info@object.com	

STAND-ALONE APPLICATIONS <i>A sampling of applications that use shared data.</i>			
NAME	COMMENTS	PRICE	ADDRESS
Datrix5	A conventional accounting package with a NeXTSTEP interface.	\$695 per module (up to four Sybase connections); \$1695 (up to 255 users); \$2695 (source-code version)	Datrix, 33 W. Boxelder #104, Chandler, AZ 85224. 602/545-7421, 602/545-7419 fax; e-mail: bobby@datrix.com
EXPO	A graphical worksheet for analyzing time-series data, using historical or real-time sources, intended for financial analysts, traders, and investment managers.	\$3000 (historical data only); \$5000 (real-time system)	Leading Market Technologies, One Kendall Sq., Cambridge, MA 02139. 617/494-4747, 617/577-8211 fax
FLIG	A GIS (geographical information system) for NeXTSTEP. Geographical objects appear against the backdrop of a scanned map. Simple demo available from ftp archives.	Free (via ftp only)	Megatel GmbH, Wiener Straße 3, D-W2800 Bremen 33, Germany. 49/421/220.95.16 fax; e-mail: mhi@megatel.de

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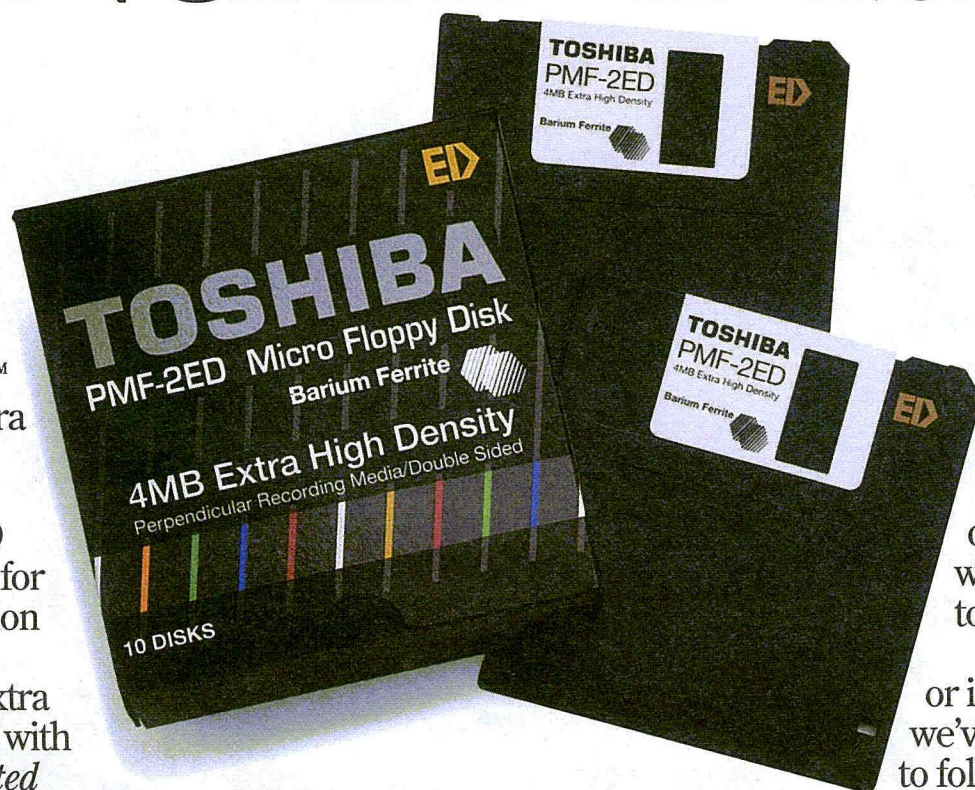
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PHOTOGRAPHS BY STUART WATSON

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Secrets of 3.0

A POWER USER'S GUIDE TO THE SHORTCUTS, SPACE-SAVERS, AND HIDDEN FEATURES OF NeXTSTEP 3.0

BY LEE SHERMAN

It's easy to spot a computer running NeXTSTEP 3.0: The new icons give it away the minute you log onto the workspace, the interactive on-line Help system is both convenient and informative, and the new animations for both folders and the Recycler provide additional feedback and visual flair. Things are even more dramatic with color systems, in which the changes stop just shy of purple scroll bars. But these are only the most obvious enhancements.

Hidden just below the surface of its slick new veneer, NeXTSTEP 3.0 includes a slew of functionality that can make working with the software easier, faster, and more fun.

Much has been said about the improved connectivity, 3-D graphics, and database functionality of NeXTSTEP 3.0, but many of 3.0's most publicized new features won't affect the daily life of the average user for some time to come. It is the little things that can really make the difference when you spend your days in front of a NeXT. There is still no way to cancel out of a panel without using the mouse, but power users will discover plenty of other timesaving techniques to enhance their NeXTSTEP experience.

Nearly all of NeXT's bundled apps have been updated in some way, but the biggest improvement is to the workspace itself. The improvements make it easier to store and find files as well as inspect their contents. The drag-and-drop idea has been extended, multitasking has been improved, and there are new ways to customize the environment to your own personal taste.

To NeXT's credit, most of these power-user techniques are fully consistent with the overall NeXTSTEP interface, so that learning them and discovering new ones is intuitive and natural. "It is a principle of NeXT's user interface guidelines that there should not be a lot of obscure functionality in NeXTSTEP," says Roy West, a member of the NeXT documentation team that contributed its favorite tips for this article.

Many of these timesaving techniques are detailed in NeXT's highly readable new User's Guide, which ships with new systems. (The guide is not included with the system-upgrade CD but can be purchased for \$50 from NeXT.) Other secrets are undocumented. Most are new with 3.0, though we've mixed in a few classics. Some of the most useful tricks are printed in color.

Top Secret

FOR THE MOUSE-IMPAIRED

NeXTSTEP has been both praised and damned for its mouse dependency. For those who prefer to keep their fingers on the keyboard and off the mouse, 3.0 provides all kinds of shortcuts.

The Command key (or bar, if you are using the new keyboard) is the way to unlock many of the secrets of 3.0. To get the idea, hold down the Command key while dropping a file over an application icon (in either the Dock or the workspace). The file opens in that application.

An especially useful Command-key goodie is the ability to "hide others" by holding the Command key down while double-clicking the icon to which you are switching. This trick hides all open applications as you switch, reducing screen clutter significantly.

You can search for text in any application by first selecting it and then using Command-e to place the text in the Find panel. You can then use Command-g to search forward or Command-d to search backward.

If the Command key doesn't do something you want, try Alternate. Pressing the Alternate key while double-clicking a folder icon is the same as choosing the Open As Folder command in the Workspace Manager's File menu.

PAINLESS MULTITASKING

Did you used to mistakenly launch multiple instances of the same application by double-clicking its icon? Now that won't happen. If you want the same app twice, you have to press the Command or Alternate key while double-clicking the application icon in the File Viewer or Dock.

If you get lost and can't find the icon for the program to which you want to switch, just bring up the Processes panel in the workspace. You can switch to any running application by clicking its icon once in the panel.

Launched application icons that aren't in the Dock now line up in a neat row along the bottom of the workspace, filling in the empty areas. The Recycler can be permanently moved to the bottom left corner of the screen, freeing up a slot in the Dock, by pressing the Command key while dragging it out into the workspace. After logging out and back on, the Recycler will be on the left. Long-time NeXT users will remember that this trick was available in earlier versions of NeXTSTEP but lost in 2.0.

When dragging and dropping from one window to the next, windows don't become active until you release the mouse button. This way, you can drag items into a window without having to reposition the window first. In 3.0, you can drag and drop an item between any two applications that support it without having to go through the workspace first.

A new "smart menus" feature saves the locations of detached submenus on an application-by-application basis, so you don't have to set up your ideal arrangement each time you start that application.

INSPECTOR GADGETS

Text in inspector panels can often be selected for cutting and pasting into another application. For example, try selecting the path information in the

Workspace Manager's Attributes inspector panel.

Inspector panels can now play sounds and display the contents of RTF and RTFD files. NeXTSTEP 3.0 supports third-party extensions to the panel, so you should expect to be able to display the contents of additional file types in the future.

The Font panel has some new features. Shift-clicking the Preview button locks it into preview, allowing you to examine each font as you scroll through. Typing + (plus sign) or - (minus sign) into the Size field in the Font panel before a value will increase or decrease the selected characters by that point value.

FINDER KEEPERS

The Finder has been much improved in 3.0. You can drag files and folders to the Shelf to use as targets (much the same as in Digital Librarian), and you can search for a file's contents as well as its name. But, to really use the new Finder effectively, it helps to know a few of its ins and outs.

Typing / (slash) or ~ (tilde) in the workspace automatically opens the Finder. Completing the pathname and pressing Return will select that file in the File Viewer.

Typing long pathnames can be a chore, but there are a few shortcuts that make the job less painful. Instead of typing the name of your home folder, use ~ (tilde) as a shortcut. For someone else's home folder use ~ (tilde) followed by the name of the home folder. If you type a few characters of the file for which you are searching and then hit the Esc key, the Finder will fill in the missing letters for you. Keep hitting Esc until you find what you are looking for. Type * (asterisk) in front of the file you are looking for to perform a wild-card search.

There is a difference between clicking the Find button with the mouse and using the Return-key shortcut. Clicking the Find button will place the file for which you are searching in the Finder window, where you can perform an action on it, like launching it or dragging it to the Recycler. If you are searching for a file, hitting the Return key will launch it immediately.

If you are searching for a folder, that folder will be highlighted in the File Viewer. Then you can narrow the search. Select one or more files on the list and drag the icon representing the selection to the Shelf. To list the contents of a target that contains multiple selections, press the Esc key.

FILES AND FOLDERS

You no longer have to worry about whether a file will fit onto a floppy disk, since the Workspace Manager now gives you the option of copying it onto several. The Workspace Manager handles the dirty work: dividing the file; compressing the parts; and prompting you to insert the next disk until the entire file has been copied over. This feature could even be used as a poor man's backup system.

The UNIX **compress** and **tar** commands have been combined in the Compress option that appears on the Workspace Manager's File menu. To compress a file, select it and choose Compress. Compressed files show up with their own icon in the File Viewer and have the extension **.compressed**. Double-clicking brings up a panel in which you can choose to decompress the file.

NeXTSTEP 3.0's new Merge feature allows you to combine the contents of several folders into one. The Workspace Manager compares the sizes and dates of the files to determine which is the most recent. Any file or folder that's replaced is moved into the Recycler, from which it can be re-

trieved if necessary. To merge, then hold down the Alt key and click into which you want to merge. The Merge button. This feature can have '486-based notebooks.

Have you ever been irritated by the Save panel? You can create a Save panel by typing a full pathname to the file. A good example of a little

FIN

Address books (in /NextStep) contain information about the users of the system. Information will already be in the Address book and phone numbers. You can add entries to the

When you double-click a file, the workspace changes to reflect the fact that you've changed the file. Double-clicking the Role button in the Role panel with information about the file deleted just by dragging it to the Recycler. Fax sharing with the Fax panel.

Some nifty new functions have been added. The Save Selection service in the Services panel. You can use the Terminal window to count words, evaluate a

The Librarian service has been added. The Notebook folder (which is in the home directory). Jot Selection. You can select your selected text to the workspace. The date and numbered sequence. The book command to search the scrapbook. You aren't limited. Services can be set up for a

These additions might be a bit overwhelming. It already runs the length of the workspace. Services on and off with the

Preferences has lots of new options. Parties can add their own preferences. Time-zone setting: Change the icon on the Net folder up

The Display Preferences panel has been added to the workspace. And while it's been there from 2.0 that you may not have noticed. Now, as you move the mouse, you continuously update the workspace. Works anywhere you encounter

Of course, you can check the workspace.

the contents of RTF and extensions to the panel, contents of additional file

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trieved if necessary. To merge, first select the folder you want to merge, then hold down the Alternate key while dragging the selection to the folder into which you want to merge. When the Processes panel pops up, click the Merge button. This feature will become even more useful when we all have '486-based notebooks.

Have you ever been irritated by the lack of a New Folder button in the Save panel? You can create a new folder in which to put a document by typing a full pathname that includes the name of the new folder. This is a good example of a little UNIX knowledge going a long way.

FINGERTIP INFORMATION

Address books (in /NextLibrary) are a new feature for maintaining information about the users on your network. If you're on a network, user information will already be included in the User address book. To store addresses and phone numbers for colleagues and contacts who are off-site, you can add entries to the Example address book.

When you double-click an address book, the commands in the File menu change to reflect the fact that you are working with names and addresses. Double-clicking the Rolodex card representing a user brings up an inspector panel with information about that person. Names can be added or deleted just by dragging the Rolodex card to the address book or disposing of it in the Recycler. Fax numbers entered in the address Inspector are shared with the Fax panel.

Some nifty new functions are available through the Services menu. The Save Selection service in Edit is especially handy for saving mail messages. You can use the Terminal service to stamp the time on your document, count words, evaluate a mathematical expression, or more.

The Librarian service has a couple of new commands related to the new Notebook folder (which can be found within the /Library folder in your home directory). Jot Selection in Notebook can be used to add a file of your selected text to the folder. The file will be named with the current date and numbered sequentially. Later, you can use the Search in Notebook command to search through the folder, building up a personalized scrapbook. You aren't limited to the Notebook folder, either; jot-selection services can be set up for any folder you like.

IF YOU PREFER

These additions might be too much of a good thing if your Services menu already runs the length of your screen. With 3.0, you can turn different services on and off with the Preferences app.

Preferences has lots of new options, with more to come now that third parties can add their own panels. One of the cutest touches involves the time-zone setting: Change the time zone and, after rebooting, the globe icon on the Net folder updates to reflect your location.

The Display Preferences panel allows you to set a background color for the workspace. And while you are in that panel, check out this classic from 2.0 that you may never have known: Click on the border of the color well. Now, as you move the cursor around in the Colors panel, you continuously update the color of the selected item. The same trick works anywhere you encounter a color well.

Of course, for really interesting backgrounds, you should check out Backspace, a screen saver comparable to commercial offerings like LockScreen, which is now included with the full NeXT distribution in source-code form. To create and

install Backspace, open up a Terminal shell and type

```
cd /NextDeveloper/Examples/AppKit/Backspace
make install
```

To install the included modules type

```
cd /NextDeveloper/Examples/AppKit/BackspaceViews
make install
```

This will install the files in your ~/Apps and ~/Library folders, respectively. To use old Backspace modules under 3.0, you need to rename them to *View.BackO, in which * matches the name of the old module.

BUNDLE OF JOY

Speaking of Terminal, you can now save Terminal windows, including the current shell, placement, and scrollback buffer, into a file. When you double-click the file, Terminal will reopen those windows, recreate the shell, and restore the scrollback.

Terminal keeps track of any program running inside a shell. When a program is running, Terminal marks the shell window as "dirty." If you try to close one of these windows, Terminal will tell you which processes will get killed. Another Terminal improvement is the ability to drag and drop files onto a shell window to move to a different directory - a lot more convenient than typing out the pathway.

Among the other bundled apps, Edit is much improved. It now offers two modes of operation: a User mode for use as a basic word processor or for reading text and RTF files, and a Developer mode with specialized commands for writing code. You make the selection in Edit's Preferences panel. Another switch lets you set a default for text or RTF.

Edit can be used to create hypertext links between different documents. To establish the link, just drag the document icon onto another and save. Double-clicking an embedded file will automatically open it.

Mail now animates the postage stamp on the Mail icon when new mail is being incorporated. You can also assign a sound to incoming mail messages. Select any sound available to your computer, or record your own using Sound.app (found in /NextDeveloper/Demos), and place it in either /LocalLibrary/Sounds or ~/Library/Sounds. Activate the sound in Mail's Preferences panel.

Preview can now display TIFF and EPS images in addition to PostScript files. And the previously buggy Grab application has been overhauled and upgraded to an officially supported application. It now provides options for capturing the whole screen, a selection, a timed screen, or a window - and it now makes the sound of a shutter snapping when taking a picture.

The best advice of all might be to consult NeXTSTEP 3.0's interactive on-line Help system, which is full of hidden gems for the power NeXTSTEP user. Don't have a new keyboard with its handy Help key? Try pressing Alternate and Control simultaneously on an old keyboard to summon help mouselessly. ♦

THANKS TO HELEN CASABONA, ROY WEST, JEFF YAKSICK, GARY MILLER, AND CATHY NOVAK OF NEXT'S USER PUBLICATIONS DEPARTMENT FOR THEIR HELP IN PREPARING THIS ARTICLE.

Optical Comeback

WITH A NEW STANDARD FOR 3.5-INCH OPTICAL STORAGE, NeXT ODS ARE BACK IN THE RING

by SIMSON L. GARFINKEL

Since the beginning, the NeXT community has had a love/hate relationship with optical disks. When NeXT introduced the NeXTcube in 1988, its rewriteable optical drive – the first of its kind – was hailed as a revolutionary breakthrough. The optical drive's 256MB capacity let users store the entire computer's operating system, together with all of their files, on a single compact cartridge. You could take it anywhere, pop it into a NeXTcube, and be off and running. Backups, likewise, were a breeze.

But NeXT's original Canon drive was slow and noisy. Worse yet, dust problems made it unreliable. As time passed, the disk's "massive" 256MB capacity proved to be limiting. And instead of becoming cheaper, the price of the drive and optical cartridges actually jumped when NeXT stopped subsidizing their purchase.

Last year, NeXT discontinued its optical drive, raising a cry of fury from some users. Fortunately, there are other options now. Thanks to the NeXT's SCSI interface, and NeXTSTEP 3.0's superb handling of removable mass-storage devices, virtually any rewriteable optical disk you can find on the market will work with your NeXTstation or NeXTcube. Just hook up the drive, reboot your computer, and insert an optical cartridge. No additional software is required.

OPTICAL DISKS TODAY

For years, makers of optical-disk drives have striven to avoid the fate of other storage media as commodity products. By making their drives and media unique and incompatible, manufacturers have competed on features and capacity without focusing on price. Once customers chose a particular

brand, they were stuck with it, having to buy additional drives and media from the same company.

While this permitted individual suppliers to make profits, it didn't promote widespread usage, since most buyers simply aren't comfortable being locked in to a single manufacturer.

Now, with magnetic disks offering the gigabytes of capacity that were once possible only with optical storage, and with removable magnetic storage upping its capacity in leaps and bounds, optical-drive makers have realized that their only future is to follow the path that they have resisted for so long and turn their drives and cartridges into commodity items. That means low cost and compatibility between brands.

But rather than re-engineer their existing 5.25-inch drive mechanisms and alienate their installed base, manufacturers have decided to restrict compatibility to their new 3.5-inch optical disks and mechanisms.

For this review, NeXTWORLD evaluated three 5.25-inch and two 3.5-inch optical drives being marketed specifically for NeXT computers. We measured the raw read-and-write performance of the drives, and then tested them with our "real-world" benchmark, making a copy of a 13MB directory tree from one part of an optical disk to another.

RESULTS

In general, the 5.25-inch units are bigger than their 3.5-inch cousins in every way: They store more information; their boxes have a larger footprint; they have more features; and they cost more. The 3.5-inch drives lived up to the promise of optical storage as a commodity: We had no problems exchanging cartridges between the two drives.

For users accustomed to the notoriously slow performance of the NeXTcube's optical drive, the good news is that the current crop of third-party op-

tical drives performs reasonably well. Keeping your data safe is still slower than putting them on tape.

Optical disks excel in storing information to which you need to refer – scanned images – and across town. If you are worried about TIFF files and chapter markers, optical is the way to go.

All of the drives tested had a "lock" button. That is bad news for NeXT users who want to disable this button. As of now, you can't. Unless, of course, you want to eject the disk whenever you want. Unfortunately, you can't eject the disk by pressing the eject button; drag the disk out.

Most of the disks we tested were 5.25-inch. If you're in the office, you might want to keep a 3.5-inch drive nearby.

Reliability remains a concern. The original NeXT Canon drive was slow and noisy. Others never lost a byte. I haven't seen any way to extrapolate data in three to five years.

Ten X OptiXchange 940
Ten X Technology's OptiXchange 940 is a 5.25-inch optical drive and a SCSI interface for configuration management. It's write-once or rewriteable.

While magneto-optical drives are faster, it is written, phase-change drives are inherently faster. Ten X's drive improves performance by buffering data to the disk, it's actually faster than write. This gave Ten X's drive a 5:1 performance advantage.

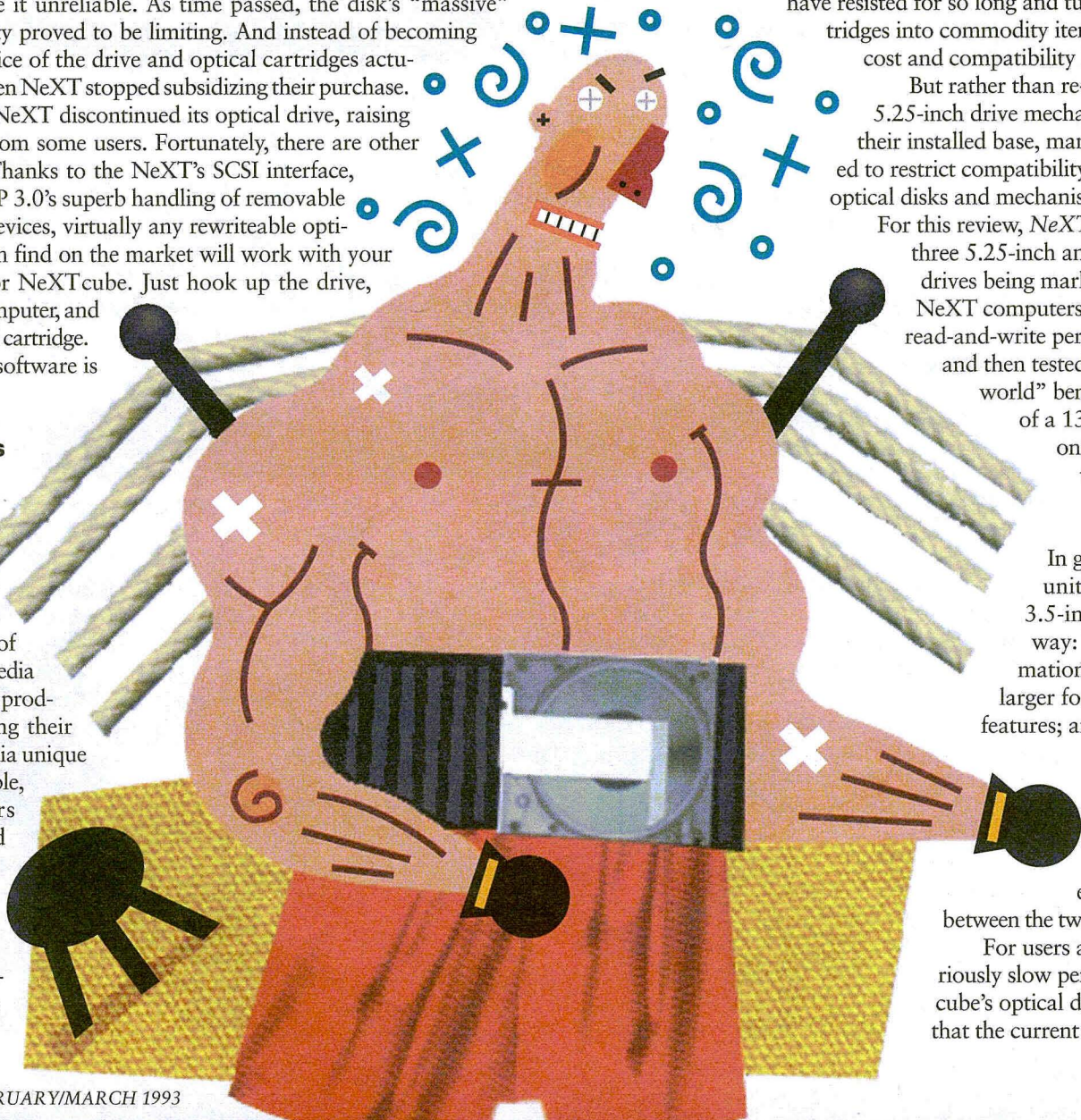
With WORM (Write Once Read Many) makes a WORM cartridge (until it fills up). On-the-fly with this drive than its competitors, we got a 5:1 compression ratio. WORM cartridge could store 5:1 more data.

WORM has a real security advantage: it's never erased. Unfortunately, file retrieval of deleted file checkpoints and then return to the 232 interface or manipulation of the disk first, or unmount the disk first, or

The OptiXchange 940 is a 5.25-inch optical drive and a SCSI interface. It's write-once or rewriteable. Users interested in less expensive WORM-on-tape drives should look at the Contemporary Cybernetic

Contemporary Cybernetic
For the security-conscious, Contemporary Cybernetic's Tahiti drive and adds DES encryption to all information as it is read back. This is good for backup of important files. Unfortunately, U.S. law requires DES encryption to an approved algorithm, you may have to use a different algorithm.

We liked the CY-2000 what is going on inside the drive. The drive is a 5.25-inch optical drive and a SCSI interface. It's write-once or rewriteable. Users interested in less expensive WORM-on-tape drives should look at the Contemporary Cybernetic



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tical drives performs respectably. But make no mistake: Optical disks are still slow. Keeping your e-mail archives on an optical disk is noticeably slower than putting them on an NFS-mounted hard disk.

Optical disks excel in on-line or near-on-line storage of large amounts of information to which you don't need constant access. They're great for storing scanned images – and even better when you want to take those images across town. If you are writing a book, optical is a great way to move 30MB of TIFF files and chapter drafts between computers at home and work.

All of the drives tested had disk-ejection buttons on their front panels. That is bad news for NeXTSTEP, which doesn't send the SCSI command to disable this button. As a result, you can manually eject any optical disk whenever you want. Unfortunately, doing so crashes UNIX, which doesn't like having its disks ejected without its permission. So don't touch that eject button; drag the disk to the Recycler instead.

Most of the disks were noisier than we'd like. If you work in a quiet office, you might want to think twice before putting an optical drive on your desk.

Reliability remains a question mark. The promised reliability of the original NeXT Canon drive failed to materialize for many users, although others never lost a byte. In our tests, the drives performed reliably. But there is no way to extrapolate from our tests what will happen to your data in three to five years.

5.25-INCH DRIVES

Ten X OptiXchange 940
Ten X Technology's OptiXchange 940 takes a Panasonic OCU-300S multimode optical drive and adds a one-line LCD display, front-panel controls for configuration management, and built-in firmware that allows either write-once or rewriteable media to be used with NeXTSTEP.

While magneto-optical disks require that each sector be erased before it is written, phase-change disks can be rewritten in a single pass, making them inherently faster. Ten X's intelligent disk controller further boosts performance by buffering all writes to the disk: While the drive is writing data to the disk, it's actually accepting data from the computer for the next write. This gave Ten X's drive hard-disk performance on writes.

With WORM (Write-Once-Read-Many) media, Ten X's firmware makes a WORM cartridge look like it is really a rewriteable cartridge (until it fills up). On-the-fly data compression lets you store much more with this drive than its competitors. Storing source code on a WORM cartridge, we got a 5:1 compression ratio, which means that a single side of a WORM cartridge could store 2GB or more of text.

WORM has a real security advantage: Once you put data on the disk, it's never erased. Unfortunately, Ten X's firmware does not allow file-by-file retrieval of deleted files. Instead, the WORM software only lets you set checkpoints and then return to them by sending commands over an RS-232 interface or manipulating buttons on the drive's front panel. Be sure to unmount the disk first, or you'll crash UNIX.

The OptiXchange 940 with WORM media makes the most sense for sites that need to store a lot of on-line information that doesn't change frequently. Users interested in this option might do better to consider Ten X's less expensive WORM-only drive.

Contemporary Cybernetics Group CY-2000
For the security-conscious, the most impressive drive of the batch is the Contemporary Cybernetics Group CY-2000, which takes Maxtor's new Tahiti drive and adds DES encryption. The CY-2000 controller can automatically encrypt all information as it is written to the disk and decrypt it as it is read back. This is great news for people using magneto-optical disks for backup of important files: A thief cannot read the archives.

Unfortunately, U.S. law restricts the exporting of devices or programs with DES encryption to any country other than Canada. If you live anywhere else, you may have trouble purchasing a CY-2000.

We liked the CY-2000's two-line LCD display, which tells the user what is going on inside the drive. An optional program that you can run

MAC VS. UNIX FILE SYSTEMS

When you insert a blank optical disk into a drive, NeXTSTEP 3.0 asks you whether you want to format the disk for a NeXT or a Macintosh. Choosing NeXT initializes the disk with the UNIX File System (UFS); choosing Macintosh initializes the disk with Apple's Hierarchical File System (HFS).

NeXTSTEP support for Apple's system should be great news for administrators of optical-disk drives in mixed Apple-NeXT environments. In theory, a mixed shop could simply format all of its optical disks with HFS and then freely move them back and forth between Macs and NeXTs. After all, it's much faster to walk a few optical disks across the room than to try and blast a couple hundred megabytes over a network.

With this in mind, I did a one-on-one comparison of NeXTSTEP's UFS and HFS implementations, both running on the same hardware – the Microtech Genesis 120 3.5-inch rewriteable optical disk.

It took 15 minutes to initialize a 120MB optical cartridge with HFS; initializing the same cartridge with UFS took just 30 seconds.

For the benchmark, I copied a 13MB folder from my home directory to the optical disk. I then timed how long it took to make a duplicate of that folder, copying from the optical disk to itself. UFS took 14 minutes, 21 seconds; HFS took 39 minutes, 38 seconds. (For comparison, the same operation took just 8 minutes, 30 seconds over NFS and 5 minutes, 10 seconds with a local hard disk.)

The real problem, though, wasn't the speed. It was the reliability. NeXTSTEP 3.0's HFS implementation consistently misplaced the contents of some files copied to the Macintosh file system. The file names were there — I just couldn't read their contents.

I also found that I couldn't place NeXTSTEP application programs on the optical disk, because NeXTSTEP's HFS implementation doesn't support UNIX mode bits. Furthermore, NeXTSTEP 3.0 can't access the resource fork of Macintosh files. With all these shortcomings, the answer is clear: Although NeXTSTEP 3.0's HFS support is handy for reading an occasional file from a Macintosh-formatted disk, it is better to use UFS to format disks that you're going to use with a NeXT on a regular basis.

on the NeXT causes this display to indicate the name of the UNIX file system that is currently mounted inside the drive. You can display your own messages as well.

We didn't like the fact that the CY-2000's encryption card must be inserted and removed every time you mount a new optical disk. There is little added security between this approach and simply inserting the card when the drive is first turned on.

The most expensive drive we evaluated, the CY-2000 should be considered by sites for which computer security and the possibility of information theft is of the utmost concern. It is also loud, so you will probably want to keep it in the machine room.

Pinnacle OHD-650
Although Pinnacle's OHD-650 didn't have the fastest raw read-and-write performance of the drives we tested, it blew away the competition in our real-world benchmark, thanks to its 4MB internal cache. We saw hard-disk performance from this optical drive. Perhaps other drive makers will wake up and start adding a few hundred dollars worth of silicon to their drives, which often cost twenty or thirty times as much.

The Pinnacle's case has contemporary styling that might be better suited to a clock radio than a computer peripheral. It had the smallest footprint of the 5.25-inch drives tested.

Unfortunately, a bug in NeXTSTEP 3.0 prevents Workspace Manager from recognizing and properly formatting the OHD-650 cartridges. That's no problem for a UNIX expert, who can just edit the system's /etc/disktab

file and then run the UNIX disk command to format each cartridge. Pinnacle provides instructions on how to do this.

Nevertheless, Pinnacle's high performance, quiet fan, and patented clear-cartridge optical media combined to make the Pinnacle our favorite 5.25-inch rewriteable optical disk available for NeXT at this time.

3.5-INCH DRIVES

PLI Infinity Optical 3.5-inch
Microtech International MP00339

Aside from minor performance differences, you will have a hard time telling the difference between the 3.5-inch optical disk drives in the PLI and Microtech cases. We tried both of these drives with media from 3M and Verbatim. The verdict: Aside from speed and noise, you can't tell these two drives apart. And they appear to be completely compatible.

That's good news for customers. With increased popularity of this format, expect to see the cartridge price drop by as much as 60 percent by the

end of 1993. It is likely that the 3.5-inch media will replace SyQuest cartridges as the new standard in high-capacity removable media.

The bad news about the 3.5-inch optical disks is their capacity. At 120MB per single-sided cartridge, these cartridges will leave most people used to NeXT's original optical disk yearning for more.

Both PLI and Microtech are likely to be offering a variety of 3.5-inch mechanisms by the time this article is in print. Pinnacle also promises its own 3.5-inch drive, which should be compatible with both the PLI and Microtech.

Our recommendation for 3.5-inch drives: Call everybody and then buy the drive that's the cheapest. In the end, that's what commodity markets are all about. ♦

In a January 1989 job interview, SIMSON L. GARFINKEL advised Steve Jobs against including immature optical-disk technology in the NeXTcube. He wasn't hired.

OPTICAL DRIVE TEST RESULTS								
5.25-inch optical drives		Mechanism	Capacity per side (MB)	Write speed (KB/sec)	Read speed (KB/sec)	Average seek speed (msec)	NeXTWORLD benchmark	Notes
Original NeXT Optical		Canon	238	66	200	13	21:44	
Ten X Technology OptiXchange 940	Rewriteable WORM	Panasonic OCU-300S	461	626	479	161	16:47	Includes cleaning cartridge Achived 5:1 compression
			Varies with compression	—	347	Depends on data	7:10	
Pinnacle PMO-650		Pinnacle OHD-650	282	238	235	46	5:46	4MB cache dramatically speeds performance
Contemporary Cybernetics CY-2000	Without encryption	Maxtor Tahiti	487	128	232	49	11:47	
	With encryption		487	127	227	50	12:02	
3.5-inch optical drives								
PLI Infinity Optical 3.5-inch		Sony SMO-C301	121	115	235	44	13:19	
Microtech Genesis 120		IBM MD3125B	121	89	244	46	14:22	Includes cleaning cartridge

OPTICAL DRIVE RATINGS								
5.25-inch optical drives		Rating	Comments	External drive list price	Cartridge price	Unformatted cartridge capacity (MB)	Cost per MB	Address
Original NeXT Optical		♦ ♦	Slow and unreliable	\$2995	\$149	256	\$0.58	900 Chesspeake Dr., Redwood City, CA 94063. 415/366-0900, 800/848-6398.
Ten X Technology OptiXchange 940	Rewriteable WORM	♦ ♦ ♦ ♦	Good raw performance, but noisy	\$5495	\$245	1000	\$0.25	4807 Spicewood Springs Rd., Bldg. 3 #3200, Austin, TX 78759. 512/346-8360, 800/922-9050.
		♦ ♦ ♦ ♦	Good WORM implementation	\$5495	\$149	940	\$0.16	
Pinnacle PMO-650		♦ ♦ ♦ ♦	Best real-world performance, but requires manual formatting	\$3995	\$199	650	\$0.31	19 Technology, Irvine, CA 92718. 714/727-3300, 800/553-7070.
Contemporary Cybernetics CY-2000	Without encryption	♦ ♦ ♦ ♦	Good design but high price	\$5990	\$200	1000	\$0.20	11846 Rock Landing, Newport News, VA 23606. 804/873-9000.
	With encryption	♦ ♦ ♦ ♦	Awkward encryption-card technology					
3.5-inch optical drives								
PLI Infinity Optical 3.5-inch		♦ ♦ ♦	Good commodity drive	\$1999	\$99	128	\$0.77	47421 Bayside Pkwy., Fremont, CA 94538. 510/657-2211, 800/288-8754.
Microtech Genesis 120		♦ ♦ ♦	Slightly quieter than PLI	\$1425	\$169	121	\$1.40	158 Commerce St., East Haven, CT 06512. 203/468-6223, 800/626-4276.

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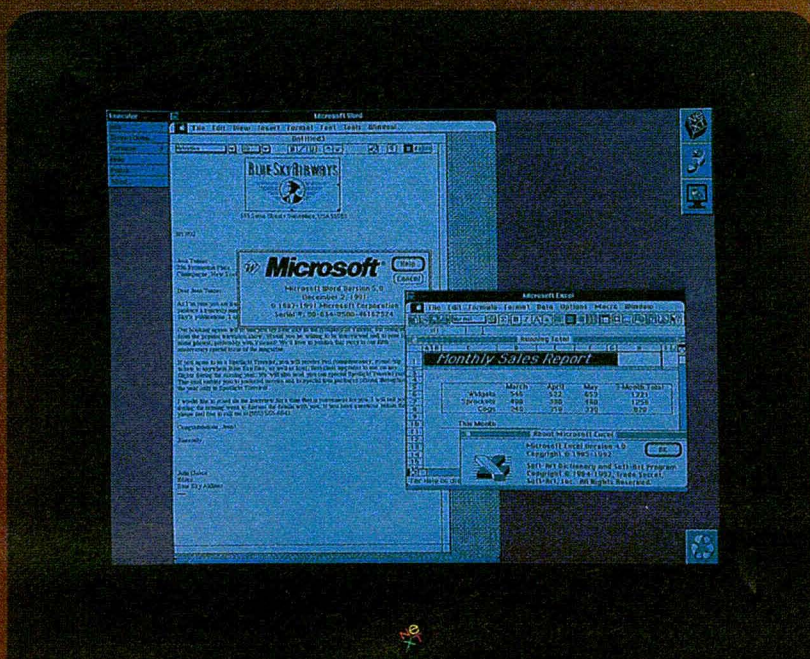
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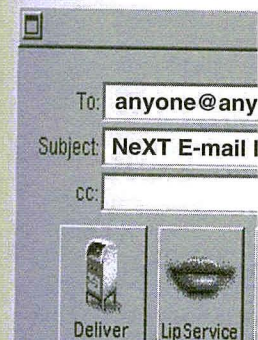
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DEVELOPER CAMP

Steve Jobs had it all wrong. At NeXTWORLD Expo last year, Jobs told a rapt audience that Sun Microsystems was NeXT's "mother of all competitors." Jobs told us how NeXT was making Sun feel the heat and boasted that whenever Sun and NeXT went head to head, Sun lost the sale.

But with NeXTSTEP 3.0 running faster on a Dell '486 than it runs on a NeXTstation Turbo Color, and with Jobs saying that NeXT Computer is "an operating-systems company that makes great reference hardware," it's time for NeXT to wake up and realize that its competition isn't in Mountain View or Cupertino, California, but in Redmond, Washington.

The choice these days isn't between NeXTSTEP and Solaris 2.0. It's between NeXTSTEP and Windows NT. And while NeXT has the superior technology, Microsoft has superior marketing, marketing, and marketing.

Most NeXTSTEP developers expect to see NeXT's installed base triple in 1993. Companies like Lighthouse Design and Stone Design anticipate that between 50 percent and 90 percent of their sales next year will be to users running NeXTSTEP on Intel-based machines.

But history tells us that competing against Microsoft with superior technology isn't enough. If it was, Digital Research's DR-DOS would be outselling MS-DOS in the PC world. But last year, despite the fact that it is better, faster, and smaller, DR-DOS garnered just 9.7 percent of the DOS market.

In competing with NT, NeXT will emphasize the economic advantages of NeXTSTEP: It's faster, and therefore cheaper, to develop custom applications with NeXTSTEP than any other operating environment. The problem with this message is that if NeXT charges \$995 for NeXTSTEP '486, the money that companies save by developing with NeXTSTEP will

evaporate when the applications are fielded.

NeXT knows this. Unfortunately, NeXT can't charge \$195 for NeXTSTEP without renegotiating its license fees for PostScript, Pantone, and UNIX. Nevertheless, expect to see NeXTSTEP '486 for less than \$500 soon after the product's introduction.

That may not be cheap enough – especially when the cost of purchasing a new '486 box is factored into the equation. Companies that develop custom applications for Windows can field them on '386 boxes.

The port of Altsys Virtuoso to Sun's Open Windows demonstrates that it is possible to develop a program on NeXTSTEP and then transport it to another environment. Bad news for NeXT: Ports to Microsoft Win-

dows are part of the business plan for both Pages by Pages and Archetype Page. Similar ports are under active consideration at companies like Adamation and Athena Design.

NeXT can't stop those ports from happening, but it could pick up \$50 per end user by developing its own porting kit and licensing that kit to developers. Such a kit would consist of the NeXTSTEP AppKit and an embedded Display PostScript server. NeXTSTEP programs wouldn't run as well

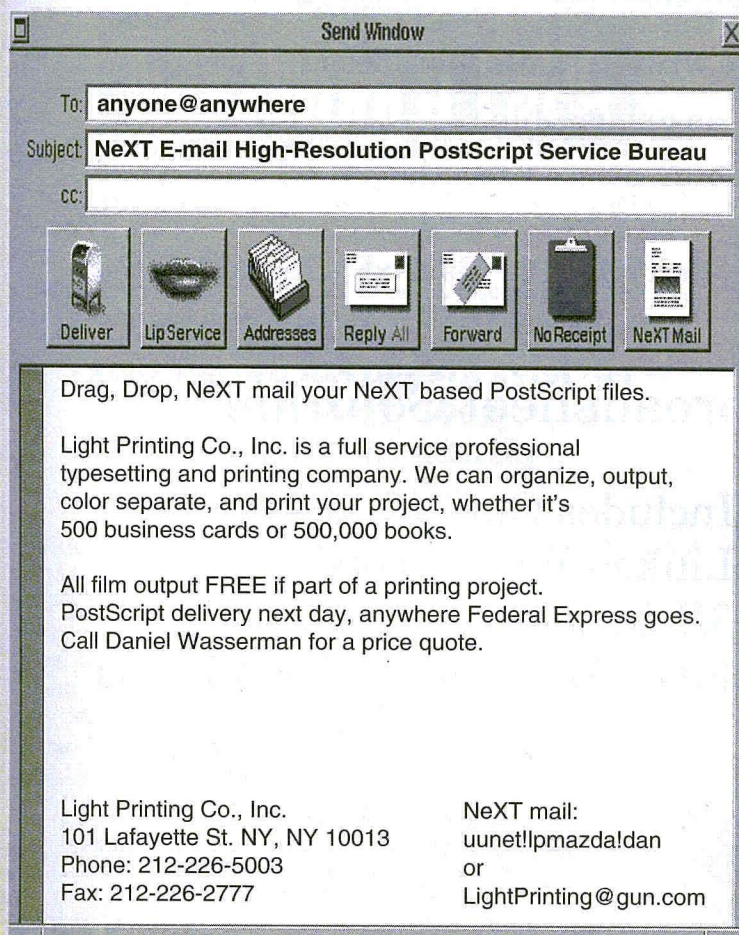
under Windows NT as they run on NeXTSTEP – there would be no live links, no workspace, no drag and drop, no Digital Librarian, only limited cut and paste between applications – but the applications would run.

Companies would then upgrade to full NeXTSTEP when they needed total integration, e-mail, and other offerings. ♦

SIMSON L. GARFINKEL, NeXTWORLD senior technical editor, is coauthor of NeXTSTEP Programming (Springer-Verlag, 1992).

Sleeping with the Enemy

SIMSON L. GARFINKEL



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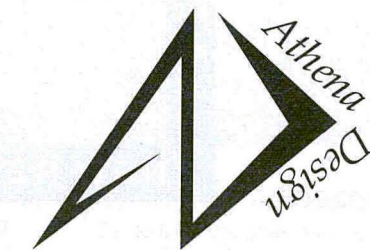
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Internati

Back when Ross Perot first met Steve Jobs at a party, the Texas billionaire wasn't as famous as he would later become, but he was just as frugal and conservative. It's hard to imagine that Steve – with the pinstripe suit he doesn't own and the haircut he doesn't have – matched Perot's idea of a prospective business partner. Yet Perot was so impressed he invested millions of dollars in NeXT.

Dr. Keizo Yamaji, the worldwide head of Canon, is treated as a demi-god in Japan. Yet he flew to California for the sole purpose of introducing Steve's NeXTWORLD Expo keynote.

These reactions are far from unique. Conservative Wall Street businessmen, world leaders, and Japanese tycoons all trip over themselves to be near Steve Jobs and respond to his requests. Why?

It's not as simple as wealth. By the standards of the super-rich, Steve isn't. Without his not-so-terribly-liquid stakes in NeXT and Pixar, his net worth is probably less than \$100 million, well below the cutoff for inclusion in this year's *Forbes* list of the 400 wealthiest Americans.

It can't just be that he has interesting things to say. Industry leaders like Philippe Kahn and Jim Manzi have lots to say, but they are not the object of hero worship. It can't be that he did something really important eight years ago; his former sidekick Steve Wozniak is greeted with curiosity but not the same awe. Charisma may be part of the equation, but is it enough to explain why jaded luminaries act like they're at fantasy baseball camp when they're around Steve?

No. Steve's stature and reputation stem from being both a man of vision and a man of action. He not only wants to change the world, he puts his time and money where his mouth is.

Look at the latest round of financing for NeXT. Canon provided a

\$55 million line of credit, and Steve provided an additional \$10 million for the same purpose. This is a promise of cash if needed (which it probably will). It comes on top of the \$30 million or more in hard currency that Steve has already ponied up to start NeXT and keep it running.

Beyond the money, Steve's commitment to the cause shows up in the long working hours he puts in at NeXT. Most of us in his position might simply invest the money to throw off \$10 million a year in interest. Given Steve's lifestyle, that's a tremendous amount of money, something like a million plain, black turtlenecks from The Gap. He wouldn't have to deal with the aggravation of running a company and answering to the press. No grueling rounds of keynote speeches. No glad handing of potential customers.

No suffering of earnest questioners who rush the front of the room.

What if he had just sat back and kept his Apple stock? Steve had about five million shares of Apple stock when he left in 1985. He sold it for about \$130 million. That same stock, after a split, would be worth about four times as much this year, as much as \$630 million. Even if he had sold the stock, he could have participated in much more boring and lucrative investments than Pixar and NeXT.

Instead, he's out there not only working every day but reaching into his pocket to further the cause. That's why Ross Perot bought a big chunk of the company and sat on its board until his presidential bid loomed. That's why Dr. Yamaji flew across the ocean and then flew right back. That's why everyone takes Steve's calls. And that's why people still believe in Steve Jobs. ♦

DAN LAVIN *comments on business issues in NeXT Ink.*

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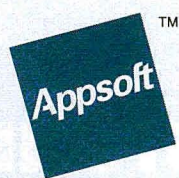
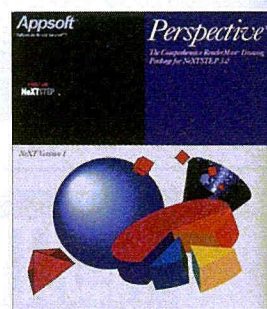
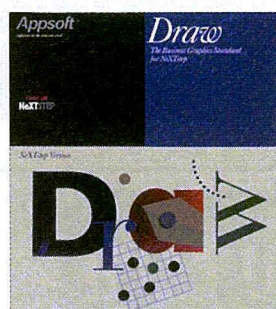
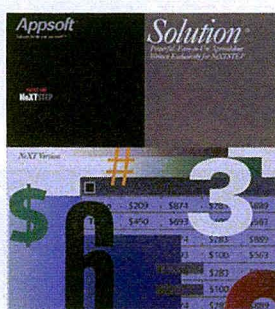
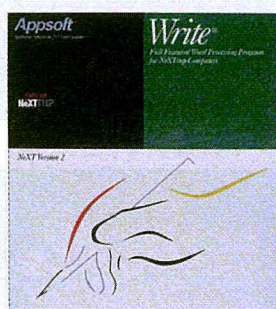
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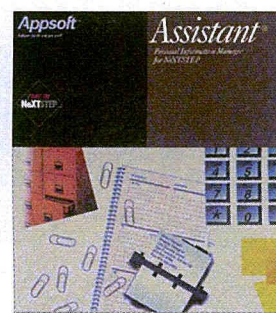
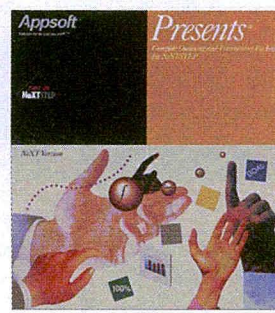
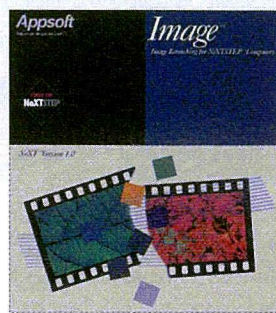
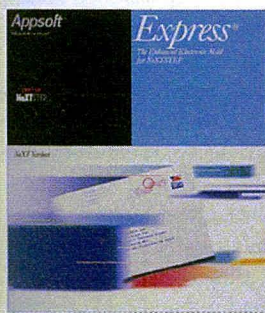
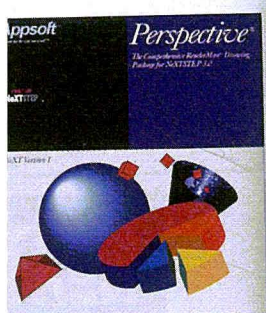
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NeXTWORLD Reviews Policy

In the two years since we last published our reviews criteria, NeXTWORLD has raised its standards for cube ratings. This statement summarizes the scope, philosophy, and rating system for NeXTWORLD reviews.

Why reviews?

Computer software and hardware are expensive, both in dollars and the time required to master them. Our readers rely on NeXTWORLD for impartial, accurate information to assist them in buying the right products to achieve their business solutions. Third parties receive independent evaluation and constructive criticism to aid them in improving their products.

The choice of products for review is solely the decision of the editors. Except for specifically labeled beta and Coming Attraction reviews, NeXTWORLD reviews only shipping products. In most cases, review units are supplied by the vendor, though NeXTWORLD will purchase products for review when a supplier is uncooperative.

The editorial staff takes seriously the significant impact a review can have on both users and developers. Our reviews are independent, impartial, and fair. They reflect the combined judgment of the editorial staff and the reviewer.

Review criteria

NeXTWORLD reviews strive to answer the following three questions:

→ How does this product compare to a baseline for all products in its category? All word processors should be able to do certain things, while all flat-file databases should have other capabilities.

→ Within its category, which specific problems does this product solve, and how well does it solve them? This is based on the goals for the product set forth by the manufacturer. Value is also a factor; The standards for a \$99 paint program are different than those for a \$695 professional illustration package. Ratings also depend on a comparison with a product's direct competitors.

→ Ideally, what might this product and category do? Here we judge against an absolute concept of excellence rather than a relative one. The NeXT environment allows for real innovation and we will reward those developers who strive for something distinctly inventive. In answering this question, NeXTWORLD will serve as an advocate for change.

Our ratings will be based almost entirely on the first two criteria. The third will be used to suggest future improvements and as a qualifier for our highest rating.

Ratings

Our system runs from zero to five cubes, in half-cube increments. Only products that innovate and push the envelope are eligible for the five-cube rating. Therefore, a very strong product without breakthrough features will receive a maximum of four cubes. The average product will receive three cubes, and we will avoid grade inflation over time.

◆◆◆◆◆ Best of Breed. Solves users' problems in innovative ways. Meets the highest goals of the platform.

◆◆◆◆ Excellent. Does the job as advertised without bugs and adds some useful touches.

◆◆◆ Good – Very good. A solid, workmanlike solution to users' problems. May have some problems but gets the job done.

◆◆ Fair. Adequate but with significant flaws. May still be a good purchase.

◆ Poor. We do not recommend this product.

Scanning the Landscape

OCR? Images? DTP? Take our tour of the NeXT scanner market

by RICK REYNOLDS

At one time, desktop scanners were considered exotic peripherals used primarily in publishing applications. In the image-conscious world of NeXTSTEP, however, most users want to use photographs and other images in their everyday documents and mail messages. Desktop scanners are quickly becoming an essential part of a basic NeXT system.

The current availability of general-purpose NeXTSTEP scanning software gives users a broad range of options among scanner types and brands. That is a big change from the situation as recently as a year ago, when the NeXT scanner market was dominated by a single player, HSD Microcomputer U.S.

In some categories, scanners have become as commonplace as laser printers and hard disks. If you have just budgeted for a scanner purchase, here is a look at the current field of offerings, to help you find your way.

Choosing your direction

Scanners are customized both for a variety of single purposes or many purposes; how you plan to use your scanner will determine which one to buy.

If you find yourself typing text into the computer from paper documents, a grayscale flatbed scanner will help you with optical-character-recognition (OCR) capabilities. You can also use a grayscale flatbed scanner if you want to bring images into your reports or newsletters and print only to a black-and-white output device.

If you want to add color graphics to your presentations or published documents, take a look at one of the color flatbed scanners. The

same holds true if you prepare advertising comps or multimedia presentations, or need to track color-image data.

If you work in high-end professional publishing and need to scan lots of images, a variety of slide scanners is now available. Your NeXT workstation also speaks easily with industry-standard high-end systems like Crosfield and Linotype-Hell. Even if you have unusual needs, like creating scanned images of three-dimensional solid objects, there is a product for you.

Reading the terrain

For this article, we took every scanner we could get into the lab and scanned the same reference images into them. Cube ratings were assigned to all software and hardware we had in hand and are based on both interface and technical considerations. We paid particular attention to how well each scanner performed real-world tasks. We also gave major consideration to ease of use.

Scanner hardware by itself isn't much use without interface software to the NeXT. Some manufacturers provide bundled NeXT software, while some NeXT software vendors provide solutions that cover multiple scanners. We rated each scanner/software combination together, issuing separate ratings in cases in which one scanner is supported by several different pieces of software. We also rated the software separately, because many users will buy these separately for use with scanners they already have for Macintoshes or PCs.

Of the 36 products mentioned in this article, we assigned ratings to 22. The rest are either not yet available or are used as a small

component of larger document management systems and are therefore not equivalent products. Our ratings provide you with a general idea but your particular needs and various features more important to you.

Grayscale flatbed

If you have no immediate need for color, there are several grayscale scanners on the market. The strongest is the popular HSD ScanSional with PowerScan. Two advantages are the line-art-mode scanning resolutions of up to 1200 dpi scanner, and the on application in this class with sharpening option.

The Canon IX-30F sharp images and come aggressive price point. In scanning, you can add the Automatic Document Feeder basic scans that require up, this unit produced the scans from our tests.

Second Glance Software recently announced that its software now supports the popular Apple OneScanner and the original Apple Scanner, which is no longer sold. Beyond the price and Apple's simple interface, some users may enjoy the having an Apple peripheral to their NeXT.

The weakest product is the Hewlett-Packard's ScanJet IIp, which stands for "personal," which in this case means a cheap product.

Scanning software	
Company	Software
Canon	IXScans
Goldleaf	eXTRASCAN
Second Glance	ScanTastic
Insight Software	ElectroFile
HSD	PowerScan
Pixelution	QScan
VISUS	PaperSight

* These products are not primarily for NeXT.

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Grayscale flatbeds

If you have no immediate need for
color, there are several excellent
grayscale scanners on the NeXT
market. The strongest candidate is
the popular HSD Scan-X Profes-
sional with PowerScan software.
Two advantages are the enhanced
line-art-mode scanning for resolu-
tions of up to 1200 dpi on a 600-
dpi scanner, and the only scanning
application in this class of machine
with sharpening options.

The Canon IX-30F scans nice,
sharp images and comes in at an
aggressive price point. For volume
scanning, you can add the optional
Automatic Document Feeder. For
basic scans that require no touching
up, this unit produced the best raw
scans from our tests.

Second Glance Software re-
cently announced that its ScanTas-
tic software now supports the pop-
ular Apple OneScanner and origi-
nal Apple Scanner, which is no
longer sold. Beyond the competitive
price and Apple's simple design,
some users may enjoy the irony of
having an Apple peripheral attached
to their NeXT.

The weakest product is Hew-
lett-Packard's ScanJet IIp. The "p"
stands for "personal," which in this
case means a cheap product that

won't stand up to heavy use. Occa-
sional users might find it adequate,
but most buyers want a scanner
they can beat on. The QScan soft-
ware from Pixelution is a good
addition.

Color flatbeds

If you want a good color scanner
for desktop publishing, then you
have a great selection from which
to choose. This is the category with

able. In addition, the case is sturdy
and well built.

Microtek Labs used to sell the
immensely popular Microtek 600Z,
and there are many of them in use.
It is supported both by Pixelution
and Second Glance, although the
scanner itself is no longer available.
Microtek's successor line, the Scan-
Maker II, will soon get software
support from Pixelution.

For color-image quality, we



the toughest competition, with HP,
HSD, Epson, and Microtek Labs in
a close race.

Unlike its personal cousin, the
HP ScanJet IIc is a solid product at
an attractive price. It runs with soft-
ware from either Second Glance or
Pixelution. The engine that it shares
with the Microtek models is reli-

found that the UMAX engine in the
HSD Scan-X Color edged out the
others in color fidelity for unadjust-
ed straight scans. If you regularly
correct your images anyway, this
may not matter to you. Still, for
speed, the image you didn't correct
is always the fastest. HSD's case is
not as substantial as the HP Scan-

Jet IIc, but the unit is smaller and
comes in politically correct black.

The Epson ES-300c also im-
pressed us. It may be the least-expen-
sive choice in this category, and it
comes with Goldleaf's excellent
eXTRA-SCAN software. Second
Glance also has a ScanTastic mod-
ule for the Epson, but the Goldleaf
product is clearly a notch better,
with a superior interface and color-
management-system features for
those who need the compensated
color abilities of PostScript Level II.

The Sharp JX-600, which was
a blockbuster in its time, is now an
aging model. A NeXTSTEP driver
has now been announced by Sec-
ond Glance, and there are certainly
plenty of these units installed today,
but we can't help wondering why
Sharp hasn't seen fit to update this
product in nearly three years.

High-end options

Professional design and production
shops may have more need to scan
transparent art (slides) than reflec-
tive art (prints). An inexpensive and
effective solution, for resolutions up
to 1850 dpi, is the Microtek 1850S
Slide Scanner combined with Pixe-
lution's QScan software. ScanTastic
drives the very popular Nikon
LS3510-AF scanners.

If you get a mixture of trans-
parent and reflective art, the XRS
OmniMedia 6C has the easiest and
most sensible reflective-to-transpar-
ent art conversion. Simply flip the
lamp cover, pull out the lamp, ro-
tate it 90 degrees, and plug it back
in. It takes five seconds and works

Scanning software comparison								
Company	Software	Cube rating	Copy protection?	TIFF & EPS?	Compression	Scanners supported	Phone	Address
Canon	IXScans	● ● ●	No	Yes	JPEG	Canon IX-30F	516/488-6700	Canon USA, One Canon Pl., Lake Success, NY 11042
Goldleaf	eXTRASCAN	● ● ● ●	No	Yes	JPEG	Epson series	415/257-3513	700 Larkspur Landing Circle #199, Larkspur CA 94939
Second Glance	ScanTastic	● ● ●	Yes	Yes	JPEG	Apple OneScanner, Sharp JX600, HP Scanjet IIc, Microtek 600Z, Epson ES300c, XRS OmniMedia, Nikon LS3510AF	714/855-2331	25381-G Alicia Pkwy. #357, Laguna Hills, CA 92653
Insight Software	ElectroFile	*	No	TIFF only	JPEG	Fujitsu high-performance series	503/222-2425	3004 S.W. First Ave., Portland, OR 97201
HSD	PowerScan	● ● ● ●	No	Yes	Several	HSD series	415/964-1400	1350 Pear Ave., Suite C, Mountain View, CA 94043
Pixelution	QScan	● ● ●	Yes		Packbits, LZW, JPEG	HP Scanjet IIc and Scanjet IIp, Microtek 1850S & 600Z	44/462/43.40.29	40B Queen St., Hitchin Herts, United Kingdom SG4 9TS
VISUS	PaperSight	*	Yes	TIFF only	PaperSight compression	Many	412/488-3600	2100 Wharton St. #701, Pittsburgh, PA 15203

* These products are not primarily scanner interfaces, but should be viewed instead as document-archiving systems.

Scanning hardware comparison

Manufacturer	Model	Cube rating	Cost	Additional software required	Additional cost	Maximum resolution	Colors	Phone	Address
Apple	OneScanner	◆ ◆ ◆	\$1178	Second Glance ScanTastic	\$495	300 dpi	8-bit gray	800/776-2333	20525 Mariani Ave., 72P, Cupertino, CA 95008
Canon	IXScans	◆ ◆ ◆	\$1545	—	—	300 dpi	8-bit gray	800/423-2366	One Canon Pl., Lake Success, NY 11042
	CI-10	◆ ◆ ◆ ◆ (beta)	\$6495	HSD Color-X	\$995	400 dpi	24-bit color	415/852-2000	1350 Pear Ave., Suite C, Mountain View, CA 94043
Epson	ES-300c	◆ ◆ ◆ ◆	\$1399	Goldleaf eXTRASCAN	\$495	300 dpi	24-bit color	310/782-0770	20770 Madrona Ave., Torrance, CA 90509
	ES-300c	◆ ◆ ◆	\$1399	Second Glance ScanTastic	\$495	300 dpi	24-bit color		
	ES-600c	†	\$1299	Goldleaf eXTRASCAN	\$495	300 dpi	24-bit color		
	ES-800c	†	\$1499	Goldleaf eXTRASCAN	\$495	400 dpi	24-bit color		
Fujitsu	3096G	‡	\$6720	Insight Software ElectroFile	\$395	400 dpi	8-bit gray	800/626-4686	3055 Orchard Dr., San Jose, CA 95134
	3096E	‡	\$6720	Insight Software ElectroFile	\$395	400 dpi	8-bit gray		
	3093	‡	\$5650	Insight Software ElectroFile	\$395	400 dpi	8-bit gray		
Hewlett-Packard	ScanJet IIC	◆ ◆ ◆	\$1995	Pixelution QScan	£195	600 dpi	24-bit color	800/752-0900	5301 Stevens Creek Blvd., Santa Clara, CA 95052
	ScanJet IIC	◆ ◆ ◆	\$1995	Second Glance ScanTastic	\$495	600 dpi	24-bit color		
	ScanJet IIP	◆ ◆ ◆	\$1095	Pixelution QScan	£195	300 dpi	8-bit gray		
HSD	Scan-X Pro	◆ ◆ ◆ ◆	\$2195	—	—	400 dpi	8-bit gray	415/964-1400	1350 Pear Ave., Suite C, Mountain View, CA 94043
	Scan-X Color	◆ ◆ ◆ ◆	\$2995	—	—	800 dpi	24-bit color		
Microtek Labs	1850S	◆ ◆ ◆ ◆	\$2199	Pixelution QScan	£195	1850dpi	24-bit color	213/321-2121	680 Knox St., Torrance, CA 90502
	ScanMaker II	*	\$949	Pixelution QScan	£195	600 dpi	24-bit color		
Nikon	LS-3510AF (8 bit)	◆ ◆ ◆ ◆	\$9535	Second Glance ScanTastic	\$495	3175 dpi	24-bit color	516/547-4355	70421.2303@compuserve.com
	LS-3510AF (12 bit)	◆ ◆ ◆ ◆	\$11,316	Second Glance ScanTastic	\$495	3175 dpi	36-bit color		
Opto-Tech GmbH	Optoscan Modular	*	\$15,000 and up	Opto-Tech ScanExt	\$1000	5000 dpi	24-bit color	49/88/56.10.81	Grube 21, D-8122 Penzberg, Germany
	Optoscan Integral	*	\$32,000	Opto-Tech ScanExt	\$1000	5000 dpi	24-bit color		
Prism Technologies	Dycam Model 1	◆ ◆ ◆	\$995		—	370 x 240 pixels	8-bit gray	705/523-5528	RR4, Site 28, Box 8, Sudbury, Ontario, Canada P3B
Rollei Fototechnik	Rolleiflex 6000	*		Opto-Tech Rollei Digital ScanPack	\$25,000			49/53/680.00	Salzdahlmer Str. 196 D-3300 Braunschweig, Germany
Sharp	JX-600	◆ ◆ ◆		Second Glance ScanTastic	\$495	600 dpi	24-bit color	201/529-8200	Sharp Pl., Mahwah, NJ 07430
VISUS	Document Scanner	‡	\$995 and up	—	—	Varies	Varies	412/488-3600	2100 Wharton St. #701, Pittsburgh, PA 15203
X-Ray Scanner	OmniMedia 6c	◆ ◆ ◆	\$3500	Second Glance ScanTastic	\$495	600 dpi	24-bit color	310/214-1900	4030 Spencer St., Torrance, CA 90503
	OmniMedia 6cx	◆ ◆ ◆	\$4400	Second Glance ScanTastic	\$495	For scanning medical X-rays			

* Untested, no rating; placed for informational purposes. † Brand-new products that were not yet ready to rate at press time. ‡ VISUS and Fujitsu scanners are designed to be used for digital document-archiving purposes. No rating is assigned as these applications are too different from flatbeds to make direct comparisons meaningful.

Review notes

A bidirectional interface is available to connect your NeXT workstation to very high end rotary-drum scanning systems from Crosfield, Linotype-Hell, Itek, and Screen. This interface is a combination hardware/software solution that allows your NeXT system to accept scans directly, in resolutions of 18,000 dpi and greater.

Scantronix Ultra starts at \$46,000 and requires Talus Imaging's ImagLink software for the NeXT at \$1250. For a lower-cost solution without multitasking capabilities, Scan-

tronix also offers the Omni, from \$35,000, and which also requires Talus's ImagLink. Scantronix: 310/644-8585. Talus Imaging: 713/561-0700; info@talus.com.

NeXTWORLD was not able to evaluate all of the largest, most specialized scanners mentioned in this article in our own lab and we invite readers to contact vendors directly for the location of an installation in their local area that they could visit personally.

great in both modes.

Not every image, however, is flat. Overhead scanners (charged-coupled devices) are like high-quality digital cameras mounted on frames so they can look down on an object, such as a piece of cloth, bowl of fruit, or a three-dimensional object and snap up images, and pass them to your NeXT. Opto-Tech offers a selection of these models to interface software with the highly-reputed Rollei cameras.

Some publishing professionals need the absolute finest quality and can't trust the quality of anything that costs less than a million dollars. For these connoisseurs, the names Linotype-Hell, Itek, and Screen are great comfort. For less than \$10,000 you can connect your NeXT scanner to your \$10,000 workstation. In fact, some of the Scantronix interfaces allow simultaneous use by both the operator and the NeXT, for more efficient workflow. If you need the mother of all you might consider considering a state-of-the-art scanner.

REVIEWS

great in both modes.

Not every image, however, is flat. Overhead scanners or CCD (charged-coupled device) cameras are like high-quality digital cameras mounted on frames so they can look down on an object. Place your cloth, bowl of fruit, or other three-dimensional object under the frame, snap up images, and pass them to your NeXT. Opto-Tech GmbH has a selection of these models in addition to interface software for the highly-reputed Rollei camera series.

Some publishing professionals need the absolute finest images possible and can't trust their images to anything that costs less than a million dollars. For these color connoisseurs, the names Linotype-Hell, Crosfield, Itek, and Screen are a great comfort. For less than \$50,000, you can connect your million-dollar scanner to your \$10,000 NeXT workstation. In fact, some models of the Scantronix interface allow simultaneous use by both the scanner operator and the NeXT operator, for more efficient workflow. If you need the mother of all systems, you might consider connecting that state-of-the-art scanner to a NeXT

using Scantronix Ultra with Talus ImagLink software.

Specialty products

Prism Technologies has a digital still camera, the Dycam Model 1, which functions like a regular camera and can hold up to 32 images before transferring them to your NeXT (see "Photos Without Scanning," *NeXTWORLD*, Spring 1992). It makes for an easy-to-use, mobile, low-resolution-image scanner.

Both Insight Software's ElectroFile and VISUS's PaperSight bring nearly any kind of paper document into an electronic environment, where digital versions are stored, organized, retrieved, and used in a clean and effortless flow. Differences between the two products arise out of individual taste or particular needs. While both use scanners very similarly, VISUS chose to support nearly every possible scanner one might connect to the NeXT, while ElectroFile supports only the HSD scanners and the high-speed, heavy-duty Fujitsu 3096E scanner.

Both products offer rudimentary export abilities, allowing users to move the occasional scanned

image to another program, so both could be used as general-purpose scanner drivers. They are designed for sophisticated document-storage uses, however, and would result in overkill if you are only interested in simple image scanning.


The most interesting specialty product may be the Canon CJ-10 (known in Europe as the Canon CLC-10), which combines a flatbed scanner, bubble-jet printer, and color copier in one integrated package. Three NeXTSTEP developers are known to be working on interface packages for this unit. If you need a color printer as well as a color scanner, you might hold off your purchase until you can get a look at this unique and useful tool.

End of the journey?

Depending on your future needs, it might make sense to buy a color scanner even if you do not yet have a color NeXT workstation. NeXTSTEP is intuitive enough to do the right thing if you want to scan a color image into a monochrome NeXT. You won't be able to view your image in color, of course, but all the color information will be

there. You can print it, e-mail it, or take it to a service bureau just as if you had used a color NeXT.

Our choices among desktop scanners are the HSD Scan-X Color with HSD PowerScan and the Epson ES-300c with Goldleaf eXTRASCAN. Both provide smoothly useful color-adjustment features and more resolution than you may ever need. HSD offers more basic image manipulation and has a nicer user interface, but Goldleaf offers the advantage of an eXTRASCAN bias table for color-management-system ties to a sister color-separation program, eXTRACOLOR.

In the end, we couldn't decide which we liked best. If you are on a budget, the lower cost of the Epson/Goldleaf route may make sense, but since your personal taste may differ from ours, you should check out both units before concluding your tour of the NeXT scanner market. 

RICK REYNOLDS is technical director of Publish magazine and a NeXTWORLD contributing editor.

Address

20525 Mariani Ave.,
72P, Cupertino, CA 95008

**One Canon Pl.,
Lake Success, NY 11042**

**1350 Pear Ave., Suite C,
Mountain View, CA 94043**

**20770 Madrona Ave.,
Torrance, CA 90509**

**3055 Orchard Dr.,
San Jose, CA 95134**

**5301 Stevens Creek Blvd.,
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70421.2303@compuserve.com

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D-8122 Penzberg, Germany

RR4, Site 28, Box 8,
Sudbury, Ontario, Canada P3E

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D-3300 Braunschweig, Germany

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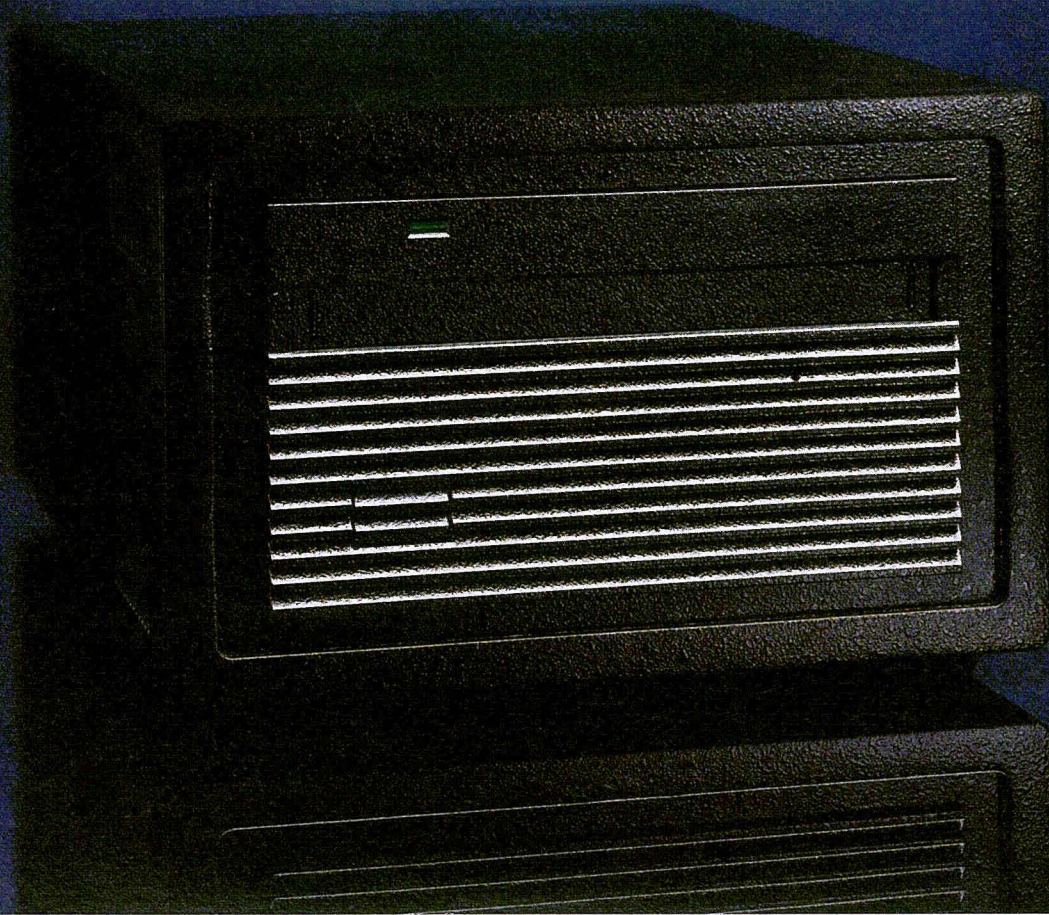
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*Athena Design
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by ROBERT LA

The NeXT's a inventory ha now, been a in the spreac partment. In mul-tidimensional apprc for some jobs but poorly others, and the program macros. Wingz offers a v of graphing options and rate scripting language, b klunky interface makes i use. Those used to spreac other platforms are not l find either an appealing c

Such users should fe home with Athena Design We judged it against the standards on the PC and Lotus 1-2-3 and Microsc and found it to be better ways but lacking in other

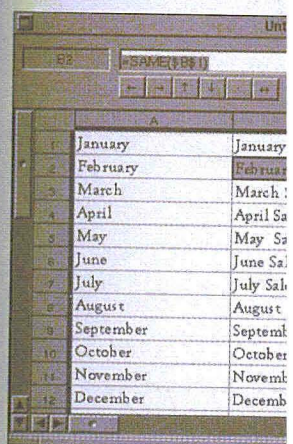
Mesa



Mesa sets out to be a straight, basic spreadsheet, and that's j is. A macro recorder and a be would be nice, but Mesa gets done – and you can't beat the

\$499

Athena Design, 17 St. Mary's Boston, MA 02146. 617/734-



This worksheet shows Mesa's @S was created by selecting A1-A12, pressing Shift-Return. In other sp users would have to copy the new

RAGE:

Comforts of Home

Athena Design's Mesa spreadsheet will seem familiar to 1-2-3 and Excel users

by ROBERT LAURISTON

The NeXT's application inventory has, up until now, been a little weak in the spreadsheet department. Improv's mul-tidimensional approach is great for some jobs but poorly suited for others, and the program lacks macros. Wingz offers a wide range of graphing options and an elaborate scripting language, but its klunky interface makes it hard to use. Those used to spreadsheets on other platforms are not likely to find either an appealing choice.

Such users should feel right at home with Athena Design's Mesa. We judged it against the industry standards on the PC and Mac — Lotus 1-2-3 and Microsoft Excel — and found it to be better in some ways but lacking in others.

Mesa



Mesa sets out to be a straightforward basic spreadsheet, and that's just what it is. A macro recorder and a better Undo would be nice, but Mesa gets the job done — and you can't beat the price.

\$499

Athena Design, 17 St. Mary's Ct., Boston, MA 02146. 617/734-6372.

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This worksheet shows Mesa's @SAME and @NEXT functions. It was created by selecting A1-A12, then typing "January," and pressing Shift-Return. In other spreadsheets (except Improv), users would have to copy the new formula manually.

Familiar territory

With a few exceptions, Mesa's feature set matches the one for Lotus 1-2-3 Version 2.2, with some Excel-style ease-of-use tricks thrown in for good measure. There is a tutorial to help 1-2-3 users get used to working with the mouse, and a slash-key (/) command translator on the Help menu. Mesa will accept either 1-2-3 or Excel formula formats — @SUM(A1..B2) or =SUM(A1.B2) — so you can use whichever you are used to. Mesa does not have a feature set to compete with the newer standard spreadsheets, such as 1-2-3 Release 3.x, but many users do not want that much complexity in their spreadsheet.

Mesa is also completely formula-compatible with the WK1 file format in 1-2-3 2.x, so you can easily load files you get from people on other platforms. Unfortunately, it can export only comma-delimited ASCII. Another limitation is that Mesa recognizes only a subset of the WK1 macro functions, so not all 1-2-3 macros will run successfully. The macro interpreter is apparently included just as an aid to 1-2-3 users; there's no macro recorder or macro-language documentation. There is also a tool kit for using Mesa with Objective-C.

While that's great for developers of sophisticated spreadsheet applications, it won't help average users automate repetitive tasks.

Mesa is not a slavish 1-2-3 clone; the programmers came up with a few cool ideas of their own to make Mesa easier to use. The Fill Smart feature uses Mesa's unique @NEXT and @SAME functions to eliminate

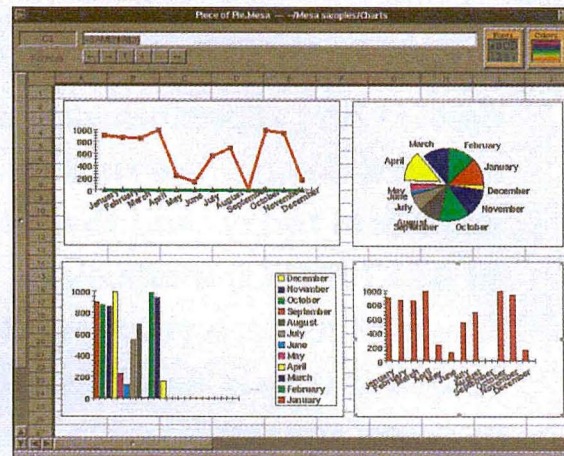
the need to type each entry in a series of labels or recopy a series of formulas when editing (see illustration). Auto Grow ranges are handy when adding records to a database. Cells are automatically formatted and formulas entered to match the existing database records. Like Excel, you can double-click row or column boundaries to enter Best Height or Best Width commands, and drag and drop a range to move or copy it.

Mesa includes a powerful but decidedly inelegant band-style report generator. You define printouts by typing a list of ranges or graph names in the order you want them to appear. You can print graphs and cell data side by side, if they appear that way in the worksheet.

Nasty stuff

A macro recorder isn't the only thing Mesa did not borrow from 1-2-3's bag of tricks. It is also missing an Undo key. Since these are two of Improv's biggest faults, that gives Improv users less reason to switch. Instead of undoing your last command, Alternate-z works like Esc in 1-2-3 or Excel: It restores what was in a cell before you started typing, so long as you haven't yet pressed Return or moved out of the cell. To make things worse, if you instinctively press the Esc key to correct a typo, Mesa saves the mistake, then moves the cursor to cell A1. Athena Design also wrote its own text objects, which don't work with NeXT's Services menu or spell checker.

Another problem is the way Mesa handles cell styles. There are Base Style buttons in both the Sheet Inspector and the Cell Format Inspector. Logically, you'd expect that clicking a style button and then changing formats would change that style, but that only works in the Sheet Inspector. If you try it in the Cell Format Inspector, as the manual seems to suggest you can, it overrides the base style for the currently selected cells. If you try to re-apply the style later, those modified with the Cell Format Inspector don't



Mesa includes most of the chart types found in Lotus 1-2-3 or Excel 2.x. 3-D support has recently been added.

change. Since styles normally make global changes, this is very confusing. Athena is revising these inspectors in the next release. In fact, many of Mesa's irritants could disappear over time as Athena adds features and corrects problems.

Get your copy today

Mesa is missing a few basic tools, and there are gaps in the manual. Still, given the alternatives (Improv and Wingz), I think most people will prefer Mesa, especially if they do not need modeling or complex scripting features.

But you do not have to take my word for it; grab a copy of the free Mesa demo from the archives or a friend who owns the program, and decide for yourself. The demo is fully functional, except that you can't create a worksheet larger than 32 by 32 cells.

If you buy the full package at \$499 list, you get a printed manual and the ability to create huge worksheets (up to 16KB by 16KB). You also get free technical support by phone (your dime) or NeXTmail. Students can buy a \$99 version with the manual in a PostScript file, and there is a floating-license-server option for networks.

ROBERT LAURISTON reviewed other NeXT spreadsheets in the January/February 1991 issue of NeXTWORLD.

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MicroPhone scripting bui

by ROBERT LA

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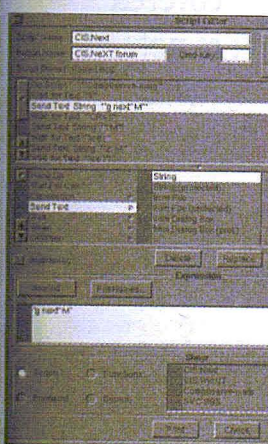
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This menu-driven editor makes i easy to edit or create new scrip

Remote Control

MicroPhone II offers whiz-bang scripting but has some rough edges

by ROBERT LAURISTON

The box says it all: "CompuServe, Genie, Dialog, Dow Jones, Mead, and other remote information services, accessible at the touch of a button . . . robust scripting and automation power take the drudgery out of connecting, navigating, downloading, and other routine actions."

That is quite a boast, but Software Ventures Corporation's first NeXT release is not quite as simple as all that: While MicroPhone II excels in providing tools to build a custom front end with a common interface to all your dial-up services, writing those applications can involve a significant amount of drudgery.

Despite some rough edges that we encountered in program setup and scripting, the program handled all major telecom tasks and proved

reliable once those tasks were set up. With its extensive scripting features, Software Ventures's responsive tech support, and the company's generous 30-day return policy, we recommend MicroPhone II for users with heavy dial-up communications needs.

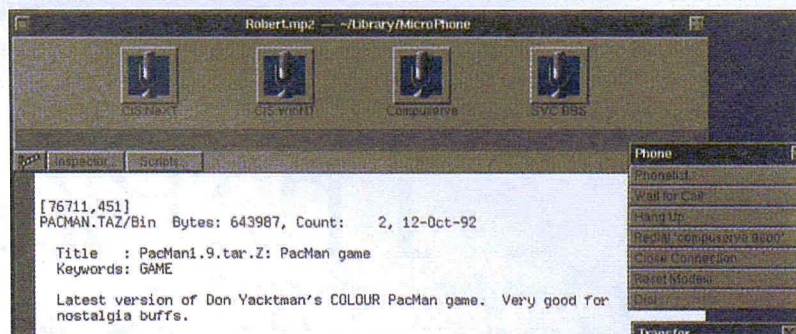
The basic task of a telecommunications program is simply dialing an on-line service and downloading files. Since many users are confused about telecommunications, this task should be as transparent as possible. An advanced program such as MicroPhone II should use scripting to automate the process and allow a company to provide completed, customized turnkey dial-up solutions to individual users.

MicroPhone II's terminal emulation is basic: just TTY, VT102, and VT220. Keyboard mapping is flexible. You can assign a script to any available Command-key combination. You can also redefine any key, with or without combinations of Control, Alternate, and Shift modifiers, as any character or string of characters.

For downloading, MicroPhone II supports most popular file-transfer protocols: Xmodem, Xmodem-1K, Xmodem-CRC, Ymodem, Ymodem-G, Zmodem, and Kermit. The one big omission is CompuServe B.

Static

In actual usage, MicroPhone II has rough edges. When I first installed the program, it wouldn't work at all. After a chat with Software Ventures's tech support, we determined the problem was MicroPhone II's Telebit T2500 driver. When I switched to the generic driver, the program worked, after a fashion, but my T2500 still ignored some commands, like Hang Up. Rather than spend several hours tweaking modem settings, I switched to a Supra modem, which worked fine



Scripts defined in a settings file show up as buttons on the top of MicroPhone II's terminal window. Users can tear off the Phone and Transfer menus for easy access but can write scripts to assign them to buttons.

with the supplied driver.

Once I had the program running, I followed the instructions in the extensive user's guide for logging onto a BBS, uploading and downloading files, and recording and editing scripts. This was all pretty straightforward, except for one odd aspect of MicroPhone II's design: All of the phone numbers stored in a settings file share the same communication, terminal, file-transfer, and modem settings. That might make sense if you are building a fancy turnkey app, but if you just want to store log-on scripts for your half-dozen favorite on-line services, it is very awkward. You either have to change the settings manually in each service's script, or store each number in a separate file. (Software Ventures says it is working on a more conventional dialing directory for a future release.)

The good news

The best part of MicroPhone II is its scripting capabilities. The Watch Me recorder makes it easy to create basic scripts. You can even nest scripts, so you can use one master log-on script for all the task-specific scripts you might create for a particular service.

For more complicated tasks, you use the menu-driven script editor. All MicroPhone II's commands and their options are listed in a hierarchical tree, so you don't have to learn or type any complicated code. The language has a full set of logical operators, so you can make scripts respond to a wide variety of conditions. For example, the first time you run a log-on script, you could have it prompt the user for a name and password, and after that the script would supply them automatically.

You can use scripts to add or remove buttons and menu com-

mands on the fly. For example, a CompuServe script might display different button groups, depending on whether you are navigating, reading messages, or transferring files. You can even create MicroPhone front ends with Interface Builder, though I found that task exceeded my limited programming skills. Learning to use these advanced scripting features would be easier if Software Ventures provided more samples.

Special modem-driver scripts are bundled with the program. When you switch to a new modem with a different command set, you load a new modem driver and do not have to revise your scripts. Drivers are included for high-speed modems from Hayes, Intel, Multi-Tech, Practical Peripherals, Prometheus, Supra, Telebit, US Robotics, and Zoom, plus generic Hayes-compatible, MNP, and V.32. If you've got the necessary technical know-how, you can even write your own.

If you want to use your NeXT to access on-line services by modem, MicroPhone II is, despite its flaws, definitely worth considering. Once you get the program working smoothly, it offers all the on-line tools most people need. If you have trouble getting the program set up, Software Ventures's technical staff promises to solve them, and they delivered on that promise with me. MicroPhone II has lots of room to mature, but this first release more than adequately fills the need for a customizable telecom program on the NeXT platform. ♦

ROBERT LAURISTON is a NeXTWORLD contributing editor.

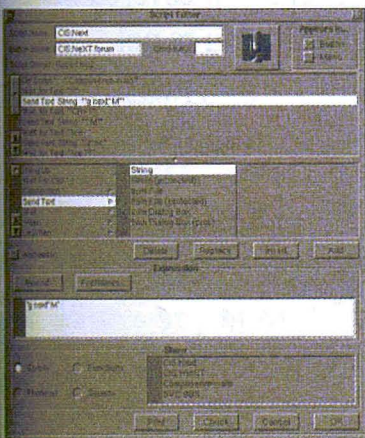
Microphone II



Microphone II's powerful scripting tools, devoted phone-support staff, and money-back guarantee compensate for its first-release glitches.

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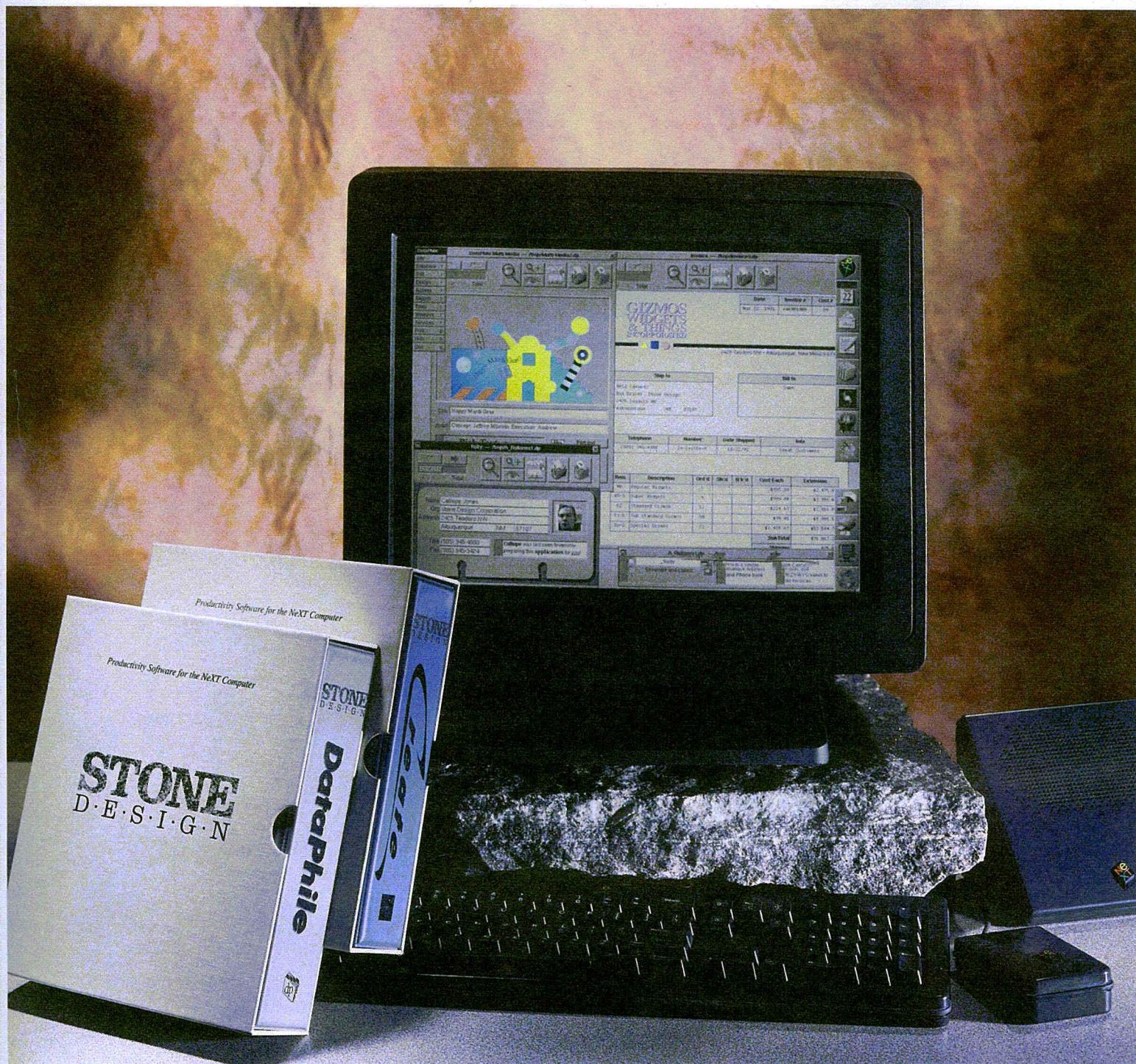


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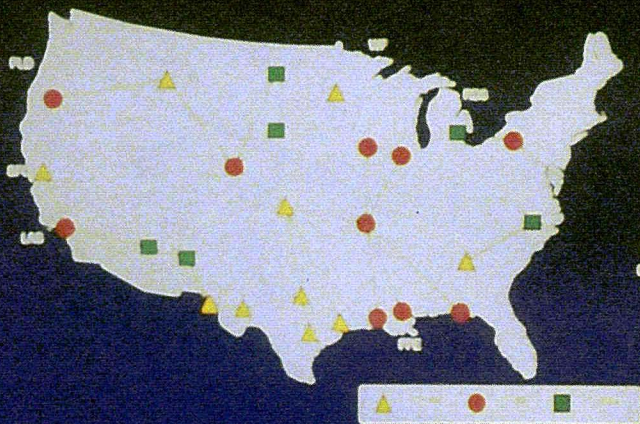
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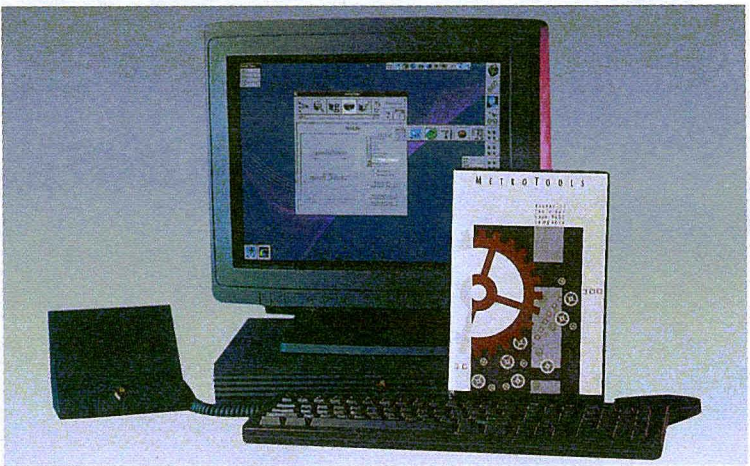
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10017 Presents 1.0 369.
10018 Presents 1.0 (5 pack)..... 1695.
10023 Express 1.0..... 79.
10024 Express 1.0 (5 pack)..... 359.
10021 Write 3.0 369. 10022 Write 3.0 (5 pack) 1595.

Call 800-800-NeXT to order.

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OBJECTIVE TECHNOLOGIES

Say good-bye to models with out-dated data. Objective Technologies' **OTProvide** automatically links your database with your *Improv* spreadsheet. Every time you open a spreadsheet, the latest data is imported to refresh the model. With OTProvide you can be confident that your calculations are based on the most up-to-date information. Plus you'll eliminate time-consuming data entry and avoid data entry errors.

SqlBuddy, new from Objective Technologies, is the database tool for professionals. It creates a friendly environment for working with relational databases. With it, you can perform database queries and commands and review the results. You don't need to know the Structured Query Language (SQL) because SqlBuddy has an easy-to-use point and click interface. Also try Objective Technologies' developer tools designed to enhance developer efficiency and consistency: *GraphPalette* (to graph data in custom applications), *MathPalette* (to create links to *Mathematica*), *SmartFieldPalette* (to restrict and format input), and *ChooserPalette* (to manage selection lists).

Objective Technologies

3282	OTProvide 1.0.....	\$699.
7142	SqlBuddy (floating license).....	399.
9344	[OT Palettes: 2.0] Graph.....	1259.
9346	[OT Palettes: 2.0] Math.....	650.
9345	[OT Palettes: 2.0] SmartField.....	650.
9347	[OT Palettes: 2.0] Chooser.....	429.

MESA

MESA—your corporate spreadsheet solution! Finally an easy-to-use spreadsheet designed exclusively to take advantage of the power of NeXT. John Perry Barlow of NeXTWORLD (Winter 1992) wrote, "If you know either Lotus or Excel, you shouldn't even need to open its manual." New features include 3D graphing capability, full SQL capabilities via DBKit, available real time stock market data feeds, and point and click sheet linking.

Mesa doesn't ignore the basics! It reads Lotus and Excel files. In benchmark tests it preformed over 30 times faster than Improv.

Presentation quality reports—unlimited text and color choices for each cell. Place commands, macros, queries, and reports in a user-definable toolbar. Mesa Object Library allows placement of live spreadsheet views and graphs in custom applications. Infinite number of views. Unlimited technical support.

Athena Design ... 30 day MBG

8684	Mesa 1.3.....	\$395.
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eXodus

eXodus leads the way to the promised land of X and NeXTSTEP integration. Applications using the X Window System are seamlessly integrated into NeXT's remarkable graphical user environment with eXodus. Use it to connect to X applications on any host that supports TCP/IP—Sun, HP, IBM, DEC, etc.—or run X programs installed directly on your NeXT. eXodus allows NeXTSTEP and X apps to run simultaneously, side by side, so you can maximize your NeXT investment and training while saving the cost of additional X terminals.

Version 5.0 of eXodus for the NeXT Computer is based on X11, Release 5 of the X Window System from MIT. New features include complete color support for all NeXT monitors, "rootless" windows and full compatibility with NeXT Computer's release of NeXTSTEP 3.0. It's easy to install—no special hardware or software is required! And comes with some basic X programs to help you get started. From the same people who developed eXodus for the Macintosh.

White Pine Software

6316	eXodus 5.0.....	\$239.
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Overnight shipping \$3.

INSIGN

SoftPC Professional is the solution that lets you run applications on your NeXT. "SoftPC Professional" is the most important program for the NeXT (4/91). Now SoftPC Professional supports Super VGA, and even Super VGA. And now **SoftPC with Windows** is the SoftPC family, includes and ready to run with a set up Windows.

SoftPC Professional and SoftPC with Windows are available with DOS 5.0 pre-installed.

NeXTConnection™

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Release 5 of the X Window
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OPEN THE DOOR TO DOS.

INSIGNIA SOLUTIONS

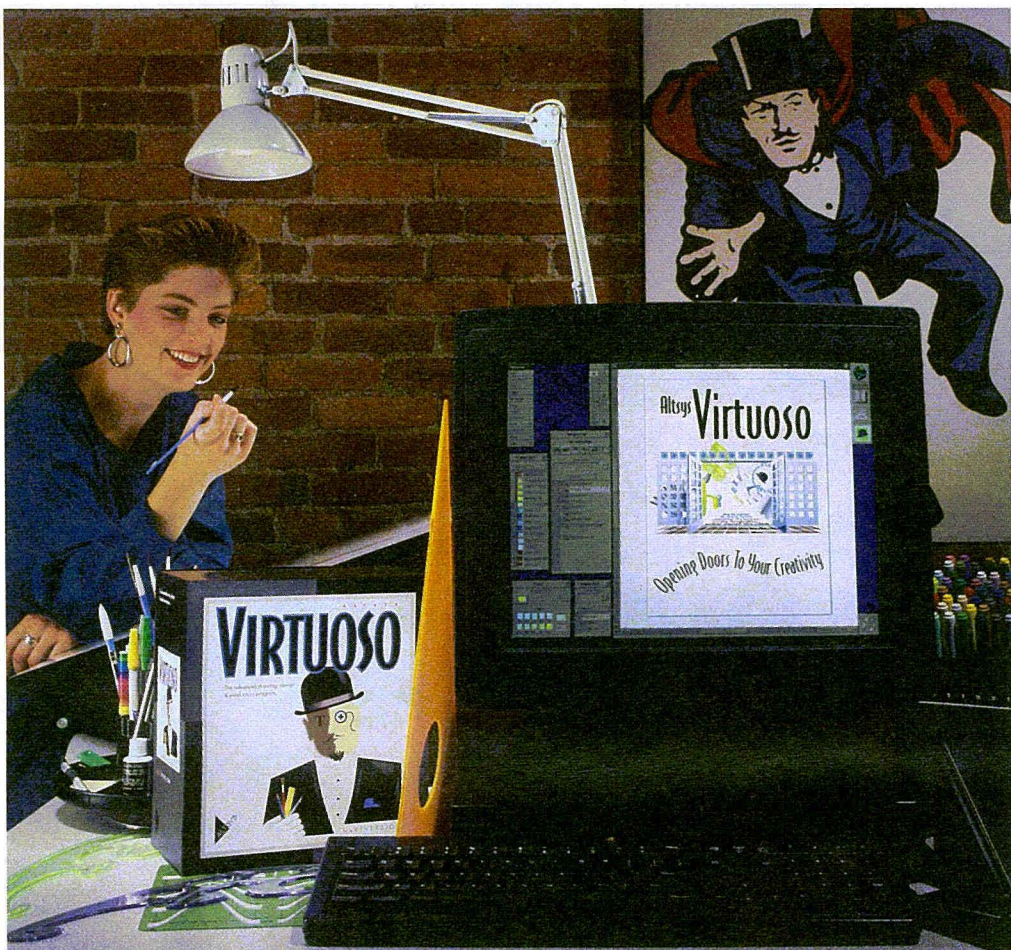
SoftPC Professional is the award-winning software-only solution that lets you run more than 50,000 DOS applications on your NeXT. "SoftPC Ranks as one of the most important programs for the NeXT," says *NeXTWORLD* (4/91). Now SoftPC Professional supports protect mode, VGA, and even Super VGA graphics—PC CD-ROMs too!
And now **SoftPC with Windows**, the newest member of the SoftPC family, includes Microsoft Windows 3.1 installed and ready to run with a set of optimized drivers to speed up Windows.
SoftPC Professional and SoftPC with Windows come with *DOS 5.0* pre-installed. Both offer protect mode support,

Super VGA, EGA, CGA graphics support, two serial ports, two parallel ports, and PC CD-ROM support. They support both extended and expanded memory configurations and can be configured for multiple hard disks. They both allow DOS access to the UNIX file system.
When it comes to performance, SoftPC and NeXTSTEP make a great team. You can run multiple DOS windows and even run NeXT and DOS software side by side. Sharing files is as easy as cutting and pasting. There's also support for EMS 4.0 expanded memory—in fact, SoftPC can access 32 MB of RAM, enough for even the most RAM-intensive applications. For optimum performance, the recommended system configurations calls for at least 16 MB RAM memory

and the fastest processor available.
The power of the NeXT—The application library of DOS—That's SoftPC.
Insignia Solutions
1456 SoftPC Professional \$329.
10010 SoftPC with Windows 419.

Call 800-800-NeXT to order.

NeXTConnection™



VIRTUOSO

Get professional drawing results with tools from the drawing professionals with the advanced PostScript drawing design and production program, **Virtuoso**. As the developer of award-winning graphics programs such as *Fontographer* and *Aldus FreeHand*, Altsys knows what you need most from a drawing program. Altsys has taken their knowledge and experience and combined it with the power of the NeXT to bring you Virtuoso.

You can create artwork free-style with the Freehand drawing tool or import it from the extensive, professional clip-art library. Draw basic shapes and lines with the rectangle, oval, and straight line tool, or get fancy with the Multigon and Pen tools. Rotate, reflect, scale, and skew objects quickly and easily. Autotrace scanned images with superb control.

Virtuoso also gives you the editing, coloring, and organization tools you need to create your designs. Undo or redo—not just the last few actions, but up to 100 levels. Zoom in or out—not just 100% or 200%, but up to 1600%. Choose spot process colors from the NeXT Color Panel, then drag and drop them into objects. Automatically create percentages of any color with the Tint Panel. Maintain your work in an unlimited number of nameable, reorderable layers—each one separately hideable and lockable.

Wonderfully flexible PostScript support, meticulously accurate alignment control, superb text editing and typographic control, varied import and export capabilities, comprehensive built-in production tools (including color separations, spot-to-process conversions, and on-screen previews)—all this is just the beginning of the list of innovative and productive features in Virtuoso, each designed to simplify your work and stimulate your creativity.

Altsys Corporation

6931 Virtuoso 1.0	\$495.
8683 Virtuoso 1.0 (5 pack)	1895.

WORDPERFECT

WordPerfect unleashed! Full-time WYSIWYG and effortless multitasking. There are a whole lot of DOS users of **WordPerfect** out there who are struggling with whether they should start using their favorite application under Windows or on the Mac. Well, the answer is neither. If you want to realize WordPerfect's full word-processing potential, the solution is NeXT.

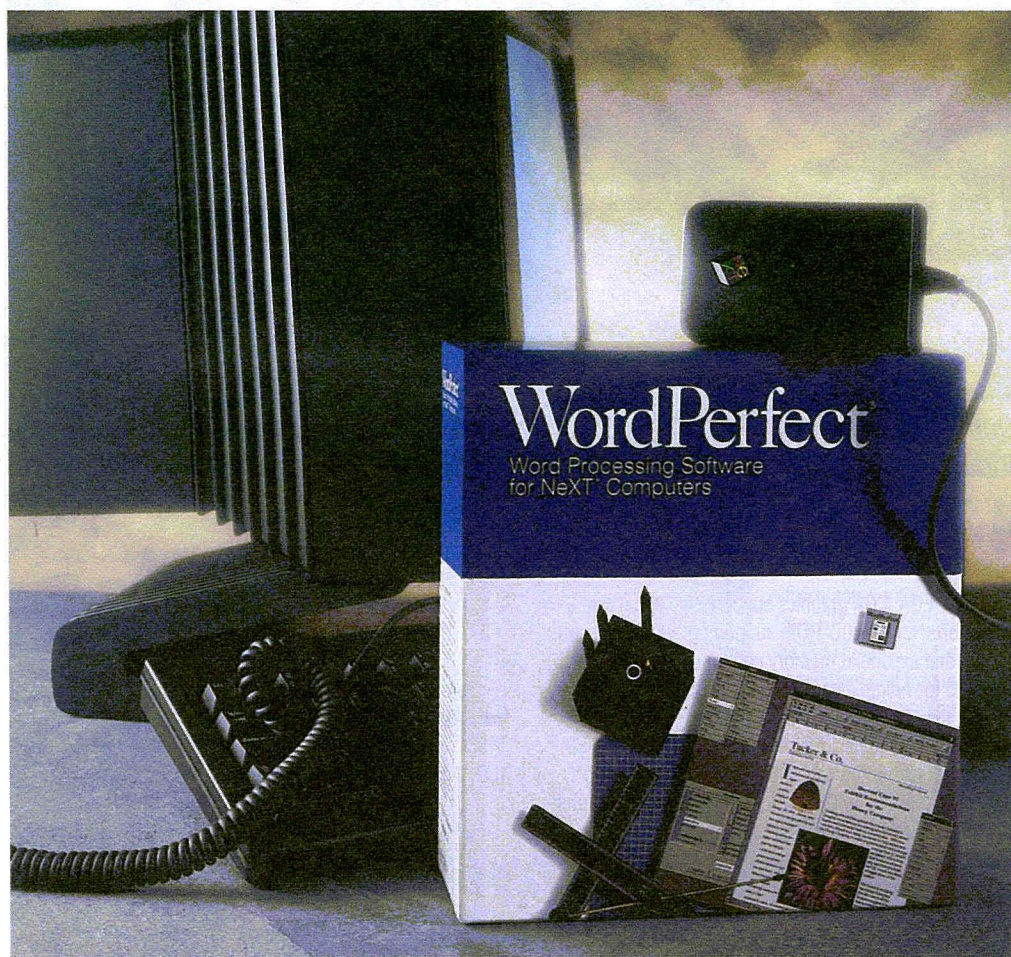
NeXT's unified PostScript imaging system puts the WordPerfect Preview mode to rest once and for all. Every element, including fonts of all sizes, headers, footer, footnotes, graphics, and columns, always appear just as they will print. And NeXT features like built-in multitasking and fax capability make WordPerfect the ultimate power tool for working with words.

But, of course, not *just* words. WordPerfect easily integrates text and graphics. Just grab your image file with the mouse and drop it on the page wherever you want (inserted in a line of text, tied to a paragraph, or even placed in a header or footer). You can scale, move, and rotate your images every which way, and add captions and borders with ease. Each time the type will automatically rearrange itself.

Naturally, you get all the basic word-processing power features WordPerfect is famous for: parallel and newspaper columns, powerful macros, mail merge, table of contents, indexing, footnotes/endnotes, a 115,000-word spell checker, thesaurus, and automatic timed backup. Any questions? Ask the Digital Librarian or consult the online reference manual. This is truly full-featured word processing for NeXT.

WordPerfect

8818 WordPerfect 1.0.1	\$299.
1576 WordPerfect Additional Station	169.



Corporate, educational, and government accounts welcome.



Look at your data in a whole new way. When you give the creators of Improv a spreadsheet and a NeXT computer, they improvise to their heart's content. Improv's unique dynamic spreadsheet lets you prepare targeted reports. Just load your spreadsheet and get a whole new view of any re-keying. You can actually look at multiple categories of data at once, displaying the same data in multiple ways to prepare targeted reports. Just load your spreadsheet and get a whole new view of any re-keying. You can actually look at multiple categories of data at once, displaying the same data in multiple ways to prepare targeted reports.

With tools from the drawing
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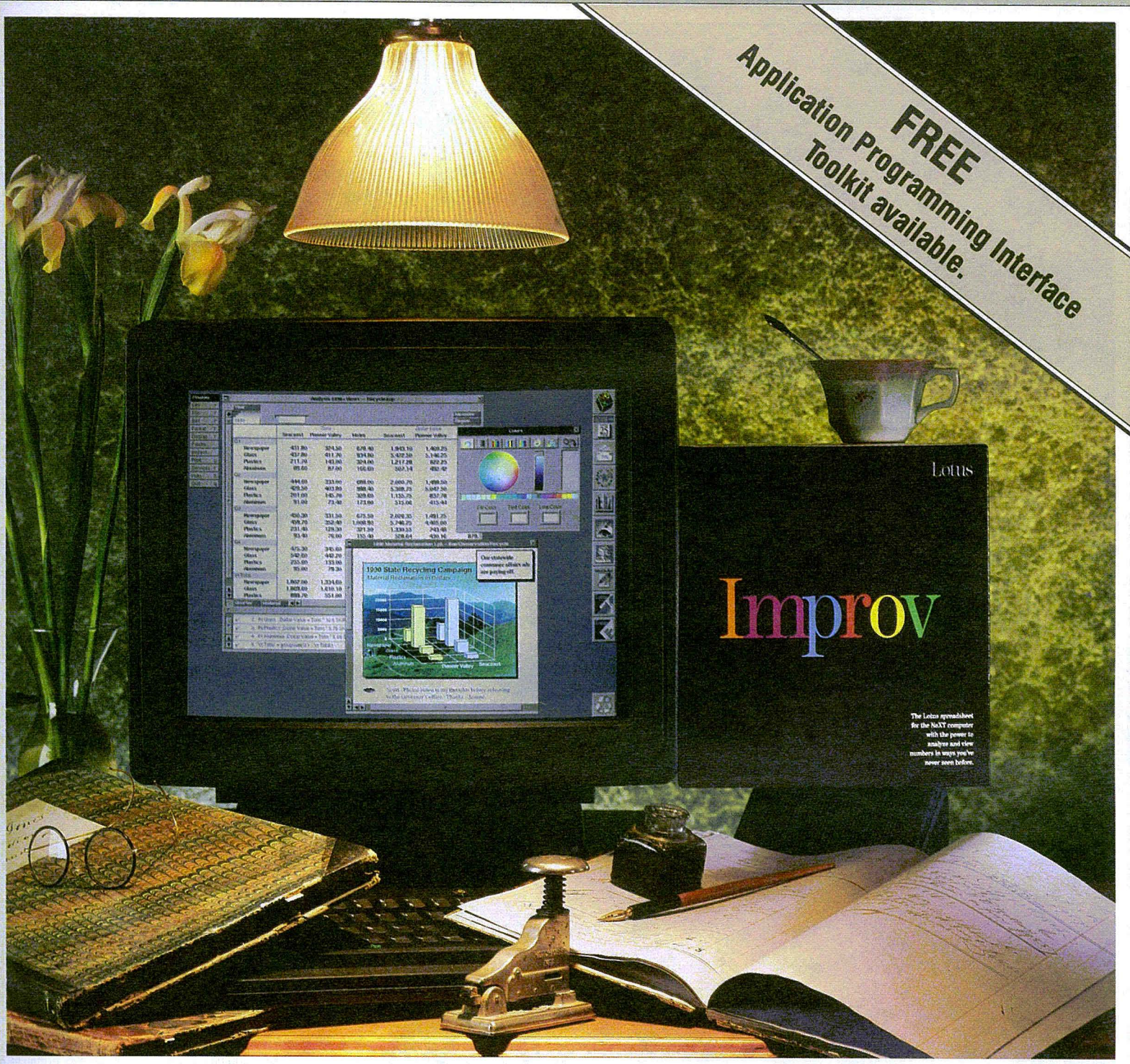
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Application Programming Interface
FREE
Toolkit available.



LOTUS REINVENTS THE SPREADSHEET.

IMPROV
Look at your data in a whole new light. What happens when you give the creators of the world's best-selling spreadsheet an 040 processor and 8 MB of RAM and let them improvise to their heart's content? You get Lotus Improv, a revolutionary spreadsheet for analyzing, viewing, and presenting your data in ways never before possible. Improv's unique dynamic view feature lets you see the same data in multiple ways to explore data relationships and prepare targeted reports. Just use the mouse to rearrange your spreadsheet and get a whole new view instantly, without any re-keying. You can actually work with 12 different categories of data at once, displayed in 2D or 3D format.

Improv lets you use plain English to define cells and create formulas (e.g., "Dollars = Tons x 12.5"). So your spreadsheets document themselves and are easy to modify and re-use. For complex formulas, you can call on a host of built-in Lotus 1-2-3 style functions. All of which makes it easy to build spreadsheets from scratch. You can also use the extensive collection of prepackaged templates and/or import existing 1-2-3 files directly. Improv lets you combine graphs, texts, images, and even sound with stunning clarity and resolution that take full advantage of NeXT. But how good is it, really? *Byte* (10/90) wrote, "Improv knocked me out." *PC World* (11/90) called it "a stunningly simple approach to organizing complex data."

What Micro? Magazine (UK, 4/91) awarded it "Most Innovative Product 1990." And *InfoWorld* (10/91) wrote, "Improv is an exciting alternative to traditional spreadsheet programs...it's one of the most innovative programs we've seen in some time."

Lotus Development
9794 Improv 1.0 **\$499.**

Call 800-800-NeXT to order.

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ELECTROFILE

Electronic filing arrives. Introducing a real solution for document management that gives you the power to locate any type of file—text, TIFF, EPS, etc.—quickly and easily. No matter how many files your library contains.

ElectroFile from Insight Software allows you to build your own classification scheme, based upon your own requirements. Because documents can be indexed and classified in numerous ways, they become much easier to locate—even those without text. ElectroFile's retrieval engine is based upon B+Tree indexes which generate fast searches, regardless of the number of documents in the library. You can design complex search paradigms with just a few keystrokes, thereby reducing thousands of possibilities down to the right one. Once you find the file you're looking for, just click "show" and ElectroFile will display an image of the original document alongside the classification interface. Then you can make corrections, attach other files, add notes or important text, and even record voice messages on the document.

And now ElectroFile is compatible with a variety of high-speed scanners and optical character recognition (OCR) systems. So you really can use it as a paperless filing cabinet. Just scan images and documents directly onto your hard drive via ElectroFile and forget about hard copies altogether!

Designed to be both powerful and flexible, ElectroFile is ideal for imaging, cataloging, customer support, account processing, or any activity which can take advantage of cross-indexing. After all, if you own a NeXT computer you're already halfway to having the world's most sophisticated filing system right there on your desk—now, with ElectroFile, you can go all the way.

Insight Software ... 30 day MBG

3308 ElectroFile 2.0 **\$449.**

WINGZ

It takes spreadsheet power to new heights. Wingz is the easy-to-use, high-performance graphic spreadsheet for business and technical professionals. You can combine numbers, words, charts, and graphics in one window and print to one page—all with one product. The Wingz worksheet is 32,768 rows by 32,768 columns (more than a billion cells) and includes over 140 built-in functions, 2D and 3D charts, and support for as many colors as your system can display.

Wingz includes HyperScript, an English-like event-driven development environment, and DataLink, an SQL database access tool. HyperScript was written specifically for graphical application development and allows you to place functional buttons, scrolling lists, and other controls right on the worksheet. And with its built-in LEARN mode, even novice users can create their own applications or customize the Wingz environment quickly and easily. DataLink, which was written in HyperScript, gives you point-and-click access to data in Informix SQL databases without having to know SQL. Just point and click at the data you need—you never have to leave Wingz' friendly graphical environment. DataLink also includes a function library so you can build custom front-end applications for your SQL database and Executive Information Systems (EIS).

Other features include powerful text capabilities—including fields for free-floating text on the worksheet, with multiple text-processing options and attribute settings—and the ability to import/export Wingz graphics as EPS images.

Minimize your reliance on MIS and create your own applications and reports with Wingz!

Informix Software

3332 Wingz 1.1AB **\$469.**



Toll-free technical support.



ANY

FRAME

The ideal document publisher for groups. Imagine WYSIWYG with graphics, tables, and even equations. **FrameMaker**—all the writing tools for long, structured document documentation, policy manual specifically designed to be used together across multiple platforms compatibility between 25 different Macintosh (and even won a 1988 award). The sophisticated page-lay-out to create up to 25 master pages.

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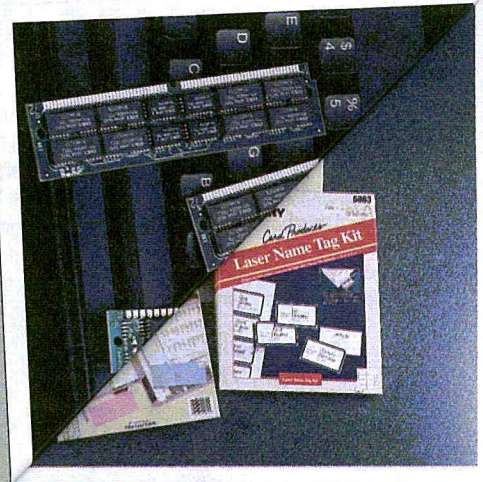
ANY DOCUMENT. NO MATTER

FRAMEMAKER

The ideal document publisher for corporate work-groups. Imagine WYSIWYG word processing, page layout, graphics, tables, and even equations in one program. That's **FrameMaker**—all the writing and graphic tools you need for long, structured documents like textbooks, software documentation, policy manuals, and proposals. And it was specifically designed to be used by multiple authors working together across multiple platforms. In fact it offers 100% compatibility between 25 different UNIX platforms and the Macintosh (and even won a 1991 *MacUser* Eddy Award). The sophisticated page-layout features include the ability to create up to 25 master pages (i.e., page formats) per

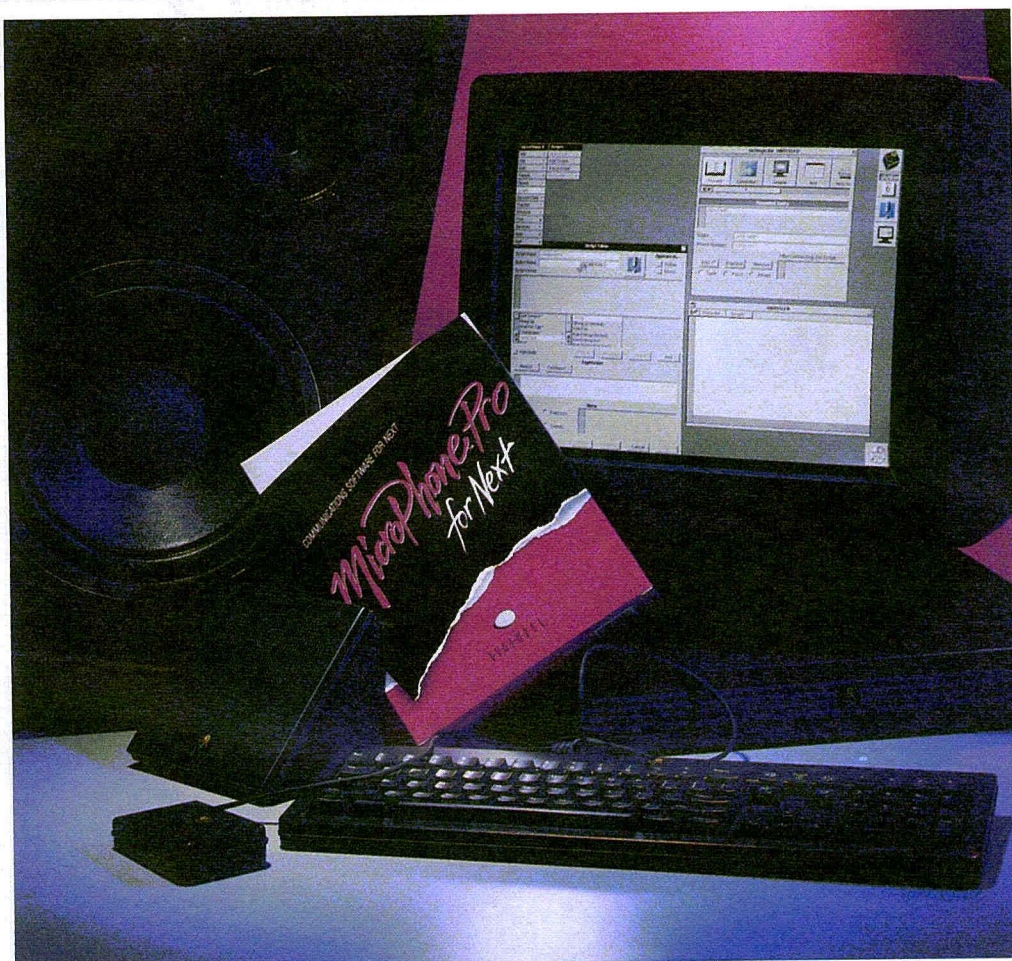
document. So you can ensure consistency as new files incorporated and documents are revised, edited, and rearranged. You can also create extensive tables of contents, lists of tables, indexes, and cross references that will automatically update whenever your document changes. FrameMaker's flexible drawing tools include a broad palette of pen and fill patterns for drawing detailed form diagrams, or complex schematics. The word processing capabilities rival those of dedicated word processors. There's a 130,000-word spelling and hyphenation dictionary; search and replace; automatic paragraph, and footnote numbering; and a complete equation palette with over 250 symbols, delimiters, and operators.

No foam peanuts



Call 800-800-NeXT to order

NeXTConnection



MICROPHONE PRO

Great communications software has arrived. With **MicroPhone Pro**, you'll have easy, intuitive communications software that takes full advantage of NeXT capabilities.

Watch in amazement or, better yet, do something else entirely, while MicroPhone Pro dials your mail service and automatically downloads your messages in the background.

Next time you log onto your favorite service, turn on the *Watch Me* feature and your keystrokes will be saved. Give the resulting script a button and you're never more than a click away. If you've written MicroPhone scripts in Windows or on the Mac, you'll discover you can use them on the NeXT with little or no modification.

And wait until you see Loran, a new MicroPhone Pro document that includes front ends to CompuServe Mail and Software Ventures' own BBS. Even though you send and receive mail from entirely different systems, the Loran interface you use is the same, saving you time and effort. Eventually, Loran will hold additional front ends for news, messaging and other services, making it a true information valet. You can also build your own NeXT front end with MicroPhone Pro's enhanced scripting power and NeXT's Interface Builder.

It's so easy to be online with MicroPhone Pro that you'll soon be doubling your pleasure and your productivity—thanks to multi-session capability that allows you to log onto several information services simultaneously. Safely send or receive anything—text, pictures, or sound—through a comprehensive set of file transfer protocols such as ASCII, XMODEM, YMODEM, ZMODEM, and KERMIT.

Insanely great software for an insanely great computer.

Software Ventures ... 30 day MBG

4759 MicroPhone Pro 1.0 **\$279.**

DOVEFAX PRO

A fax and modem combined. The **DoveFax Desktop for NeXT** features a 9600 bps CCITT Group-3-compatible fax that makes full use of the intuitive NeXT fax interface so you can send any kind of document directly from your NeXT. DoveFax features true background operation, an on line telephone directory, automatic answering, fax preview, and customized cover pages. You can send faxes at high resolution and print incoming faxes at your choice of 200 x 200 dpi or 200 x 100 dpi Display PostScript.

DoveFax Desktop also includes a Hayes-compatible 2400 bps modem that supports a complete range of communications services, protocols, applications, and electronic bulletin boards. The **DoveFax 14.4 Pro** handles everything the DoveFax can, but has a 14,400 bps data modem with V.32, V.42/V.42bis advanced data compression and error correction for throughput up to 57,600 bps. You can also send faxes at 14,400 bps (downward compatible to 9600 bps). Both modems are backed by Dove's solid customer support and 1-year warranty.

Dove Computer ... 1 year warranty

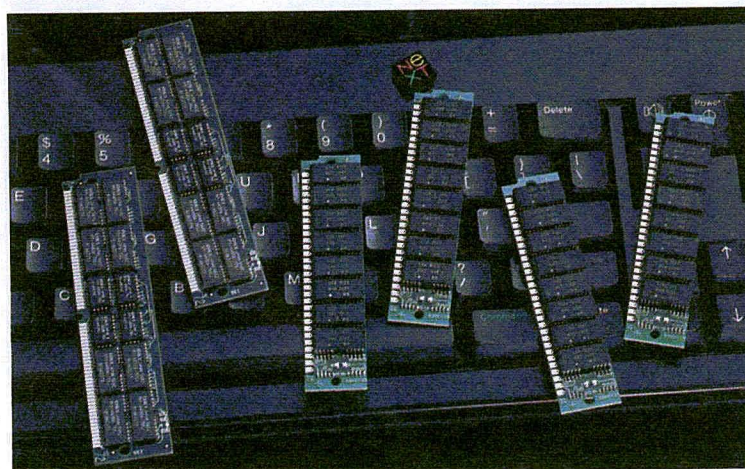
9356 DoveFax Desktop..... **\$279.** 7154 DoveFax 14.4 Pro..... **\$549.**

MEMORY

Running out of RAM? We can help you get back to full power overnight. Just call as soon as you start running out of room and we'll send more memory by Airborne Express for delivery the next business day. Our **4 MB** and **16 MB Memory Upgrade Kits** feature low profile, non-parity, 80ns SIMMs that are compatible with the 68030 and 68040 Cube and the 040 workstation (monochrome only). We also carry **8 MB Memory Upgrade Kits** for NeXTstation Color and NeXTdimension boards. (The latter requires 2 Kits/16 MB at a time.) And Installation? For the workstation we recommend an authorized dealer—otherwise you risk voiding the warranty. But you can go ahead and install them yourself in the cube—we'll provide toll-free tech support.

Memory ... 2 year warranty

8910 4 MB SIMM (80ns)..... **call**
 1935 8 MB Memory Upgrade Kit (for NeXTstation Color, NeXTdimension, and NeXTstation Turbo; two 4 MB x 8 SIMMs, 70ns)..... **call**
 8911 16 MB Memory Upgrade Kit (four 4 MB x 8 SIMMs, 80ns)..... **call**
 8324 16 MB Memory Upgrd. Kit (mono & color turbo stations; two 8 MB x 8 SIMMs, 70ns). **call**



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8 MB x 8 SIMMs, 70ns). **call**

NeXTConnection™

HAYES ISDN

Integrated voice and data technology has arrived. And NeXT computers are the perfect platform for this exciting breakthrough. The new **Hayes ISDN Extender** is designed to work with NeXTSTEP 3.0 and all the new ISDN applications that are coming out for high-speed, digitized voice, data, fax modem, and multimedia as well as remote LAN connections. It's the first telecommunications network interface module for NeXT computers that provides both ISDN Basic Rate Access and analog telephone line connectivity to NeXT computers, thereby providing low-cost, powerful connectivity to NeXT users worldwide. There's an 8-pin modular connector for an ISDN Basic Rate Line and a 6-pin RJ11 connector for an analog phone line.

The Extender supports both AT&T and Northern Telecom ISDN switches and fully implements both the Hayes Standard AT Command Set (so you can use those familiar Hayes commands) and the Hayes AutoStream protocol which, with supported software, opens the door to multiple voice/data sessions.

Data transmission options range from 300 bps to 38,400 bps and voice capabilities include the standard analog phone interface along with battery feed and ring voltage for up to three typical analog devices (e.g., phone, fax, and answering machine).

If you're not using NeXTSTEP 3.0 or you need to bring ISDN connectivity to a Sun or other workstation you'll want the **Hayes ISDN System Adapter**, an external RS-232 serial device (with a switch-selectable V.35 interface) that comes complete with its own Digital Signal Processor (DSP), codec, high-speed processor, and power supply.

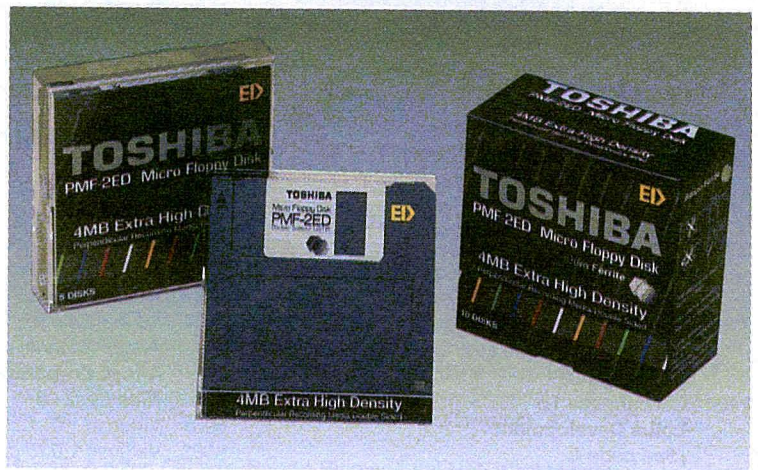
Hayes ... 2 year warranty
1013 ISDN Extender **\$279.**
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<i>(See page E)</i>	
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Athena Design ... 30 day MBG	
<i>(See page F)</i>	
8684 Mesa 1.3	395.
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DIT ... 1 year warranty	
8657 OnDuty 1.0.....	279.
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3711 SpeedDex 1.01 (10 pack)	699.
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<i>(See page J)</i>	
3332 Wingz 1.1AB	469.
Insight Software ... 30 day MBG	
<i>(See page J)</i>	
3308 ElectroFile 2.0	449.
Lighthouse Design, Ltd. ... 60 day MBG	
<i>(See page C)</i>	
2409 Concurrence 1.1	795.
Lotus Development	
<i>(See page I)</i>	
9794 Improv 1.0.....	499.
Midiapolis ... 30 day MBG	
<i>(See page D)</i>	
10044 DayTripper	99.
Stone Design ... 30 day MBG	
<i>(See page A)</i>	
1637 Dataphile 1.04.....	529.
Teledia	
4726 FileMaster 1.0	299.
WordPerfect	
<i>(See page H)</i>	
8818 WordPerfect 1.0.1	299.
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DIT ... 1 year warranty	
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Dove Computer ... 1 year warranty	
<i>(See page L)</i>	
9356 DoveFax Desktop (incl. 2400 modem)	279.
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Hayes ... 2 year warranty	
<i>(See page M)</i>	
2307 Smartmodem 2400 (requires cable)	279.
5024 Ultra 14.4 Modem (requires cable)	669.
1013 ISDN Extender.....	279.
4998 ISDN System Adapter (reqs. cable).....	749.
Insignia Solutions	
<i>(See page G)</i>	
1456 SoftPC Professional.....	329.
10010 SoftPC with Windows	419.
Marble Associates	
1012 Teleconnect 1.1	249.
Software Ventures ... 30 day MBG	
<i>(See page L)</i>	
4759 MicroPhone Pro 1.0.....	279.
Telebit ... 1 year warranty	
5080 T3000 Modem (requires cable).....	669.
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<i>(See page H)</i>	
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<i>(See page E)</i>	
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<i>(See page K)</i>	
8241 FrameMaker 3.0	549.
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<i>(See page B)</i>	
8621 Diagram! 1.1	special offer 239.
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Midiapolis ... 30 day MBG	
<i>(See page D)</i>	
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<i>(See page A)</i>	
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<i>(See page D)</i>	
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<i>(See page D)</i>	
8325 MetroTools 1.2.....	69.
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PROGRAMM

Absoft	
8898 Fortran 77 3.1	
6745 FX (Debugger)....	
Objective Techn	
<i>(See page F)</i>	
9347 [OT Palettes: 2.0]	
9346 [OT Palettes: 2.0]	
9345 [OT Palettes: 2.0]	
9344 [OT Palettes: 2.0]	
3282 OT Provide 1.0....	
7142 SqlBuddy (floating	
ONyX Systems .	
2340 BugByte 2.1	
Professional Sof	
<i>(See page D)</i>	
9357 Objective DB Tool	
Triakis ... 30 day	
1963 T-Calc 1.0	
1965 Math++ 3.0.....	
1966 DAN, the Data AN	
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<i>(See page F)</i>	
6316 eXodus 4.0.....	
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<i>(See page D)</i>		
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<i>(See page F)</i>		
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(See page M)

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<i>(See page L)</i>		
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Perception and Reality

When NeXT added 3DKit to NeXTSTEP, who would have thought that, within a month, no fewer than six companies would announce modeling software based upon it? 3D Reality from Stone Design is the first of this bumper crop to ship.

3D Reality is a polygon-based modeler that takes advantage of 3DKit's RenderMan interface to create three-dimensional images for use in multimedia presentations, desktop-publishing projects, scientific visualizations, and more. The shipping copy we reviewed had many interesting and useful features

but suffered from some serious bugs and a quirky user interface. The bugs should be ironed out by the end of the introductory period, but the interface problems and relatively high price for a program appropriate for the low- to midrange

3D Reality



The first 3-D modeling tool to ship. Equipped with extensive modeling and rendering capabilities but flawed by some bugs and a quirky user interface.

\$495

Stone Design, 2425 Teodoro N.W., Albuquerque, NM 87107. 505/345-4800; e-mail: info@stone.com..

of the 3-D market leave it vulnerable to the looming competition.

At the heart of 3D Reality are six extensible libraries. You create images by dragging and dropping shapes, clip art, shaders, textures, images, and RIB files from the libraries into the work area, then fine-tuning them with inspectors. The inspectors allow you to change image details such as shape, camera angle, shaders, and lighting effects.

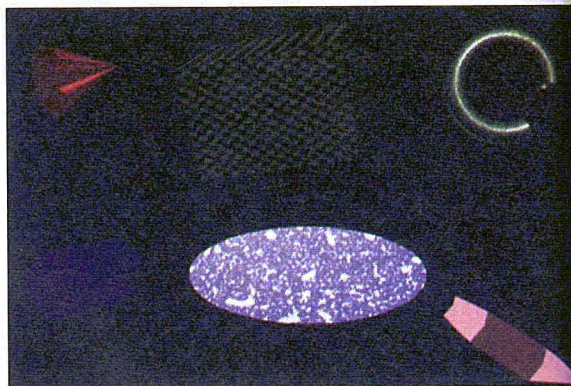
Though these features offer a huge range of options, Stone Design has only partly met the challenge of presenting them in an understandable way to the user. It still has work to do in reducing the complexity of the menus and making the functionality more accessible — and therefore more powerful.

The Shapes Library ships with 16 fully editable objects, including the basic cube and sphere, as well as more complex objects like parabolas, hyperbolas, cones, and even a teapot. SEL, the Stone Extensible Library, gives users a full API interface for building their own shapes and inspector parameters. Even without programming, you can add your own 3D Reality models to the SEL for use as shapes in other models.

The Shapes Library also includes a surface-of-revolution editor for creating lathed objects, by which 2-D images are rotated around a defined axis, as well as an extrusion editor, which extends 2-D objects out into 3-D space. A built-in text extruder will easily create 3-D text from any font in your system.

The Shader Library includes a selection of basic shades. You can also use the shaders and textures provided in NeXTSTEP 3.0 or add third-party shaders, such as V.G. Shaders from the Valis Group or Form & Function's Wraptures. EPS and TIFF files can also be processed for use as texture maps or backgrounds and added to the libraries.

A very powerful multilevel save feature enables users to build their own 3-D clip-art library. 3D Reality



After some practice, you can produce renders like this.

allows the importation, saving, and editing of RIB files, the cross-platform, industry-standard RenderMan format. Completed images can be stored in the Image Library for use in documents or graphics arts projects.

Because of the built-in RenderMan support on the NeXT, 3D Reality off-loads the rendering task to the system. This is a very handy capability, although 3D Reality provides no user feedback as to how long a rendering task will take or how much progress has been made. We think this is an area that needs improvement. For quick feedback without having to wait for a full rendering, the InstyRender tool lets you quickly render only a portion of the 3-D image and gives you design feedback while authoring.

While there are no real animation programs available on the NeXT today, as new products come on the market you will be able to export your models as TIFF or PICT files for use in animation programs. In the meantime, you can sequence a group of TIFF files to create an animated scene, similar to grouping PICT files into a PICS file on the Macintosh.

With the explosion in 3-D graphics software, NeXT users have the opportunity to create graphics that were previously impossible. (NeXTWORLD will present a roundup of 3-D modelers in an upcoming issue.) By shipping first with a rich set of features but some evident flaws, 3D Reality sets the standard against which other programs will be judged. ♦

by DAVID S. JACOBS
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61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100

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111	112	113	114	115	116	117	118	119	120
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51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

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101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
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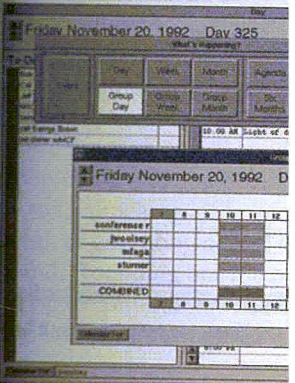
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Happenin

For all the talk about group scheduling, the good application is on any platform where multitasking is a scheduler's natural, calendar programs have been especially weak.

Now that is changing. Near to shipping Pencil Me, breaking off some of its What's Happening technology into a group scheduler.



Group views in What's Happening display in a variety of visual time frames.

Opening, NeXT users have a variety of programs for managing individual calendars and to-do lists. The What's Happening is a combination that does almost anything in a calendar program. For example, it may do more than they would expect.

The heart of What's Happening is a panel, which allows you to create any of five types of events. They can be one-time or recurring or non-recurring, contact information, attached messages. Alarms can be set to a voice message or screen panel, assigned to any number of users. For security, they can be set to be read-only or writeable.

Schedules can be displayed in various views – in text or charts by day, week, month, and six months – or output to a variety of formats. Navigating around the interface and years is easy and natural. Display scheduled time as background.

What's Happening?



Group-scheduling application that does everything you'd want. Underlying data is stored in a relational database.

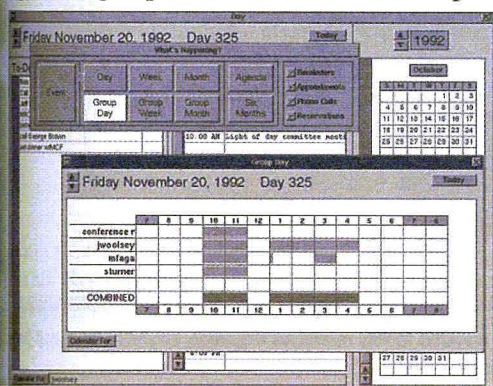
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Happening Software?

For all the talk about collaborative computing, there are remarkably few good applications for group scheduling on any platform. On NeXTSTEP, where multitasking should make having a scheduler open at all times a natural, calendar programs of any type have been especially weak.

Now that is changing. With Sarrus Software near to shipping Pencil Me In and Adamation breaking off some of its Who's Calling technology into a group scheduler called What's Happ-



Group views in What's Happening display workgroup schedules in a variety of visual time frames.

pening, NeXT users have a choice of full-featured programs for managing individual or group calendars and to-do lists. The first out of the gate, What's Happening is a comprehensive application that does almost anything you can imagine in a calendar program. For some users, though, it may do more than they want.

The heart of What's Happening is the Event panel, which allows you to categorize entries as any of five types of events. They may be tentative or firm, recurring or not. They may include contact information, attached files, and Lip Service messages. Alarms can be set to tickle you by voice message or screen panel. Events can be assigned to any number of users or resources. For security, they can be set as private, readable, or writable.

Schedules can be displayed in eight different views – in text or charts by day, week, month, and six months – or output in various report formats. Navigating around the days, months, and years is easy and natural. The group views display scheduled time as bar charts, so finding

What's Happening?



Group-scheduling application that does virtually anything you'd want. Underlying database lends an industrial feel.

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open slots visually is easy.

The ability to handle multiple resources is provided by the robust underlying database, which Adamation licenses from Ingres. The server technology provides for industrial-strength data handling and searching, but it also contributes to a somewhat industrial feel.


Using a computerized calendar should feel like paging through a datebook, but What's Happening feels more like a mainframe-style database. While you can enter basic information in the calendar views, you enter most data in the Event panel. You are prompted twice, to confirm the entry and to inform you of the entry. Although these messages can be switched off in preference settings, the default settings err on the side of too much information.

Depending on your preference settings, performance can be sluggish. If you want all views updated or resources set on each view (otherwise you must refresh each screen individually), the database response may take a second longer than you would like.

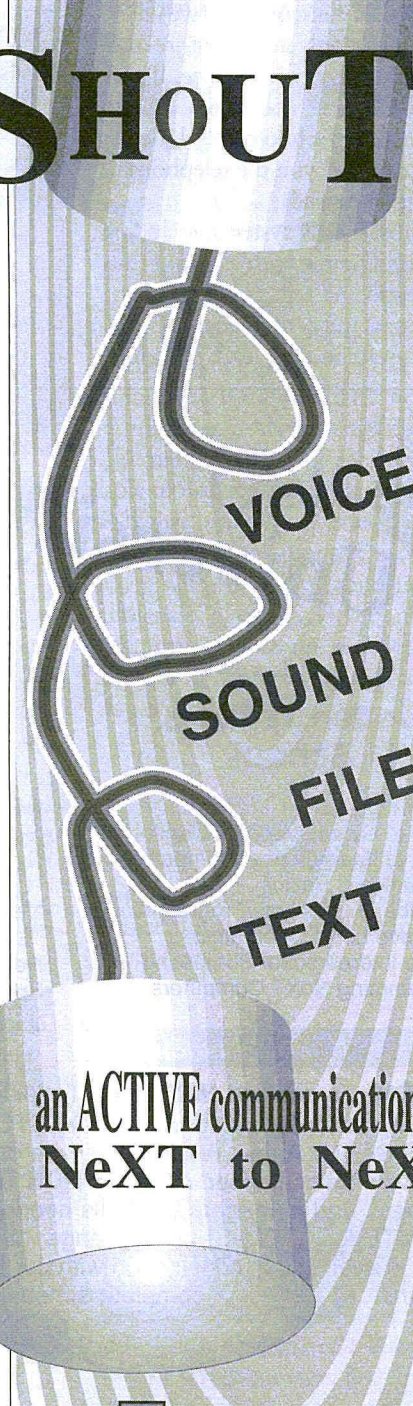
I have some other quibbles. The to-do list has no function for setting priorities, but simply lists each entry alphabetically. Text can be entered in the day and week views but can be modified only in the Event panel. The views have fixed text boxes, so only a limited amount of information is displayed. I'd also like to see more report options, including reduced-size output for popular notebook formats.

One annoyance relates to group scheduling. What's Happening makes it possible for another user to put a nonerasable event on your calendar. A better solution would be to provide a means for users to accept a proposed event before it is entered in the database.

What's Happening is a strong NeXTSTEP program despite these reservations. It follows the interface guidelines well. Screen real estate is used judiciously with the proper preference setting, so it is natural to keep the program running at all times without cluttering your workspace. A Services menu item allows you to call up schedules from within other applications. The documentation is complete and contains a good tutorial. Installation is fairly automatic for stand-alone systems, but you'll want your system administrator to set it up on your network.

What's Happening is a good choice for workgroups or departments with heavy scheduling needs, and it will likely find a home in many corporate NeXT sites. Users more interested in managing their calendars wouldn't go wrong either, but they might find that What's Happening is more database than they are looking for. 

by DAN RUBY



SHOUT!

VOICE
SOUND
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TEXT

an ACTIVE communication tool
NeXT to NeXT

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Calling All Users

Shout is a good idea with a weak implementation. NeXTmail is great for messaging across a network, but we all know it can only act as a store-and-forward answering machine. If you need to reach someone in real time, Information Technology Solutions's Shout can give you the telephone hookup you need.

Most UNIX systems, including the NeXT, come with a pair of utilities, **rwall** and **talk**, for real-time messaging and conferencing. They aren't useful in the NeXT's graphi-

cal environment, though, because they depend on everyone running a terminal shell and looking at it regularly.

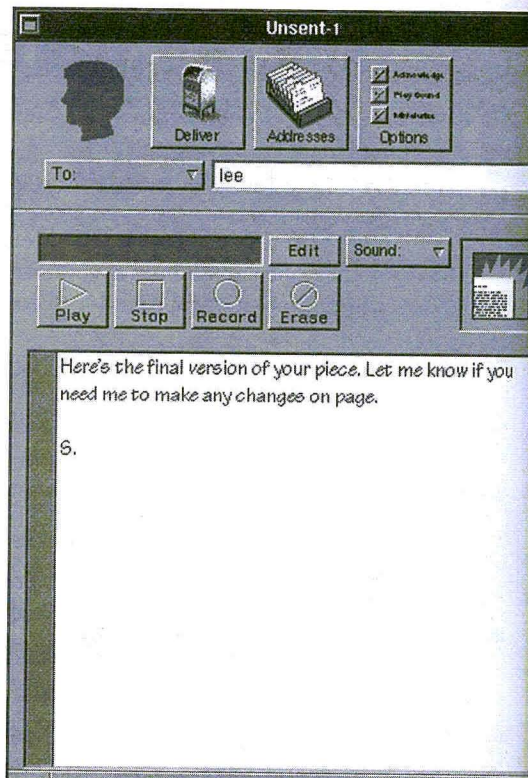
Shout provides the functionality of these utilities in a true NeXT application. Unfortunately, Shout's implementation is nothing to call home about. The functionality is there, but the interface is mediocre, and in a convenience application, interface is everything.

In the Message window, you can type Rich Text messages, drag and drop files, or record sounds for sending to your coworkers. Instead of dropping files into the body of

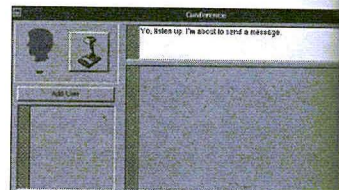
the message window itself, however, you use a file well, which accepts only one file at a time. Also, you can only play sounds that you record using Shout. The program maintains a log of sent and received messages but puts them in separate windows so it is difficult to see your message history at a glance.

Shout's big advantage over NeXTmail, its ability to serve as the host of an on-line conference, is similar to that found in Adamation's LiveWire. But unlike LiveWire, which relies on Net Info for its information, Shout maintains its own internal list, checking to see where and if other copies of the program are running. When it finds a machine that is running Shout, it adds that name to the menu of available users. If you bypass the list and type in a name manually, Shout gives you the option of sending e-mail instead.

To cope with current bandwidth limitations, voice messages broadcast in conference mode are compressed on the sending end and decompressed on the receiving end, though they are not broadcast in real time. Shout is also available from the Services menu, where it appears with options to place the



Shout's message facility resembles NeXTmail, except in the way it handles attachments.



Shout's on-line conferencing has an easy-to-use interface.

current selection in Shout's text window or to launch Shout and put the selection in the address field.

Shout is more of a walkie-talkie than a telephone. But if you are part of a big network and receive many messages that tend to get ignored until the last minute, the program could be an effective, if difficult-to-use, way of making your voice heard.

by LEE SHERMAN

Shout



A teleconferencing application that allows you to send text messages across a network in real time and voice messages in close-to-real time. While it has the advantage over e-mail of allowing real-time conversations and conferencing, it is very awkward to use.

\$245 for two-user license; discounts for large-site licenses

Information Technology Solutions,
400 W. Erie #301, Chicago, IL 60610.
800/394-4487, 312/587-2000.

WorldClock



\$99
Information Technology Solutions,
400 W. Erie #402, Chicago, IL
312/951-7462.

People who call Germany morning and Australia in noon will find this product sensible. It shows the time the same clock-face display. NeXT's Preferences application adds important features. Most clocks can be set for time from Peoria to Perth, although WorldClock is missing daylight-time support for many time zones and has limited placement options for the clock. The alarm function can "sound" by popping up a dialog box, sending e-mail, launching a file (in .snd), or executing a shell command. Rounding out the service to time stamp documents and a lackluster timer. **KD**

CuillaMartin Calculator



\$79
CuillaMartin, 610D Barron Blue
Grayslake, IL 60030-1376, 708/

Using a spreadsheet for simple calculations that occur in daily business life is like using a Scud to kill a fly. Calculator Set is a decent flyswatter, providing functionality at an affordable price. Included are basic mathematical functions, scientific, and conversion calculators. Although nicely done, the utility is diminished by the need to reach for three different applications for such single-purpose items that should have more originality. CuillaMartin has announced an update that combines the functionality of all calculators into a single unit. Look forward to seeing it. **LS**

WarplIt



\$219
MIDIapolis Systems, 3208 W. Lake
Minneapolis, MN 55416, 612/822

WarplIt's centerpiece is a non-linear mesh-warp capability (like the PixelPaint Pro on the Macintosh). To warp an image, you drag at intersections on a mesh that is on top of the image. The im-



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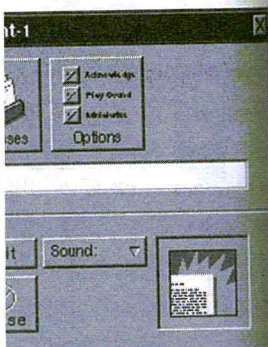
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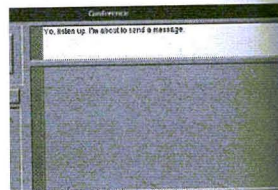
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NeXTmail, except in the way it han



line conferencing has an easy-to ce.

election in Shout's text win o launch Shout and put the in the address field. ut is more of a walkie-talkie telephone. But if you are pan network and receive mail s that tend to get ignored last minute, the program an effective, if difficult-to of making your voice

E E SHERMAN

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\$219

MIDlapolis Systems, 3208 W. Lake St. #133,
Minneapolis, MN 55416. 612/822-1604.

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Reviews Desk

As the NeXT aftermarket fills out, the profusion of minor applications, utilities, games, and other conveniences threatens to overflow our pages. That's great news for users, since these are the products that provide richness and excitement to the platform. As an example, the utilities, games, and locking system here are all small but critical products to some subset of users.

If you are looking for Barlow & Lavin, John Perry has taken his thumb and hitched to the back page, while this new department will give brief consideration to products we can't review in depth. Every issue, my select gang of reviewers and I will look at the latest and greatest among the NeXT third parties' burgeoning bag of tricks. This time out, we catch up on some of the backlog piled high on my desk. — DAN LAVIN

This month's gang: SIMSON L. GARFINKEL (SLG), RICK REYNOLDS (RR), KRISTIN DYER (KD), LEE SHERMAN (LS), DAN PORT (DP), AND MYSELF (DL).

reshape itself based on the new position of those points, producing a highly distorted but visually arresting result. Though basically a one-trick pony, WarpIt also includes more commonplace effects like rotation, shearing, and scaling. Limited animation support allows transformations to be recorded over a series of frames, producing an effect similar to a morph. **LS**

Jewel of the Matrix



\$99.95

Object Horizons, 167 Milk St. #212,
Boston, MA 02109-4315. 617/499-9523.

For NeXT users who don't have a direct link to the Internet, Jewel of the Matrix is a snapshot of the Internet NeXT archives. The snapshot, taken in June 1992, predates NeXTSTEP 3.0, which unfortunately makes this CD-ROM of limited value: Nearly all of the applications on Jewel of the Matrix are now out of date. The text files are indexed with Digital Librarian 2.0, which means that they must be copied onto your hard disk and re-indexed if you wish to search them. The disk also contains a spiffy application called Miner, designed to uncompress and untar the archives on the disk; unfortunately, Miner isn't reliable under 3.0 either. Though this version is of limited value, a more current Jewel could be highly useful. **SLG**

LaSTLock



\$195

Prevail, 5760 Herma St.,
San Jose, CA 95123. 408/629-3972.

This is the only solution sold specifically for securing your NeXTcube against physical theft, and it does the job well. It consists of two huge cables, three padlocks, and different bolts for work surfaces of variable thickness. Quality and attention to detail are evident in this home-grown product. For example, it prevents removal of the back plate of the Cube, to protect the physical and data security of boards inside. Installation instructions are clear and thorough. Though we did not try sawing through it, clearly the casual and not-so-casual thief would be deterred. Unfortunately, there is no version of LaSTLock designed for a Slab. **DL**

Ragnarök, Twilight of the Gods



\$49.95

David S. Jeorg Productions,
2S-538 Heaton Dr., Batavia, IL 60510.
708/879-6261.

Rarely is a game not just another rehash of standard ideas. Given the paucity of games for the NeXT, Ragnarök's originality makes it especially welcome. This product is based on an old Viking game and can best be compared to a strategy

board game like Stratego. One side tries to maneuver Loki to an escape while the gods of Asgard try to prevent the escape. The game is best played between two players over the network. The strategies involved are subtle and definitely not obvious, requiring some hours of experience to play well. **DL**

EquationBuilder



\$250

Digital Tool Works, 100 Charles St., Suite D,
Boston, MA 02114. 617/742-4057.

Typesetting mathematical expressions on any platform has always posed a challenge. For documents requiring a large number of expressions, TeX is the standard. EquationBuilder, however, is an excellent alternative that non-TeXperts are able to use instantly. The interface is highly intuitive: Create expressions with a few mouse clicks; edit them with EB's Inspectors and two-dimensional editing (a very nifty feature). After you're satisfied, simply cut and paste into FrameMaker, Edit, or whatever. EquationBuilder's ability to paste in TeX is useful as an easy method of creating complicated TeX expressions. Although we reviewed the NeXTSTEP 2.1-compatible version, EquationBuilder Version 3.0 with Object Links was due to ship in early December. **DP**

RightBrain Rulers



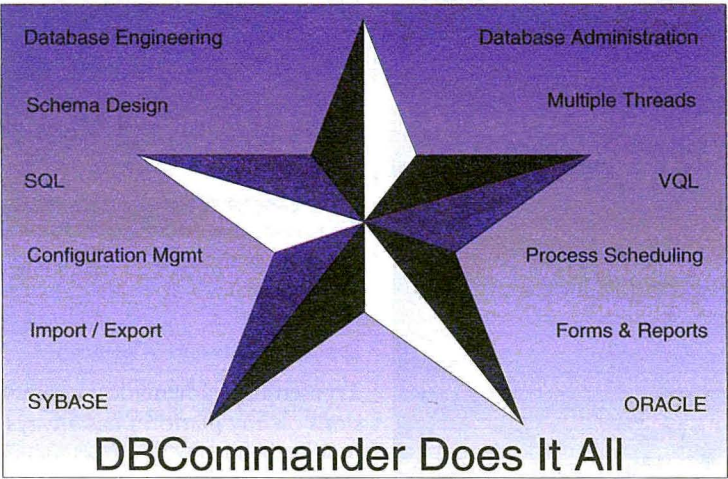
\$99

RightBrain Software, 132 Hamilton Ave.,
Palo Alto, CA 94301. 415/326-2974.

This is a special utility that floats a pair of vertical and horizontal rulers, on your screen, to hover over any NeXTSTEP application. The rulers snap together to form an angle tool to measure, line up, or frame any elements in any document at any time. Since individual programs offer their own rulers, the product may seem superfluous. It isn't. Built-in rulers fixed to the sides of windows in other applications are tedious to line up against. This product brings them right up against the edge of your work. **RR**

Product Showcase

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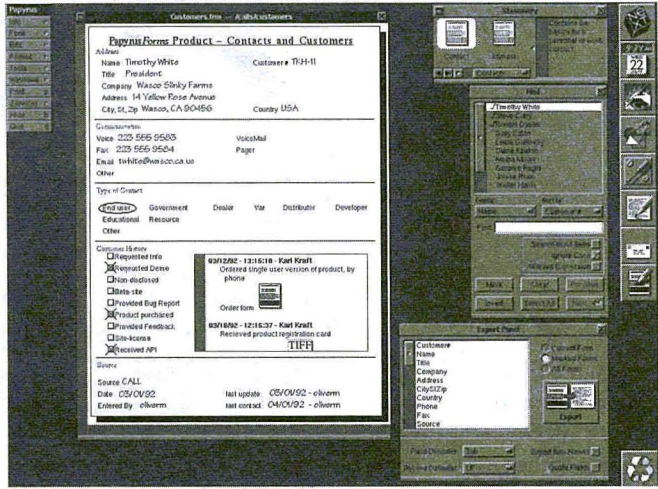


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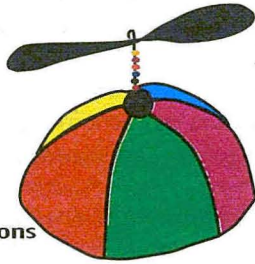
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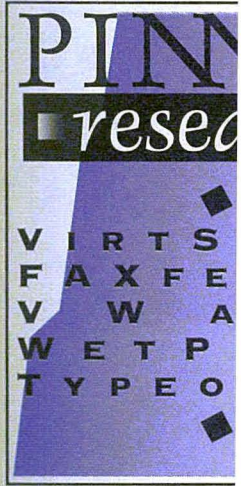
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7	D	7.5696	D	7.5696			7.5696
8	D	8.5696	D	8.5696	Default	Default	8.5696
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10	D	10.5696	D	10.5696	Default	Default	10.5696
11	D	11.5696	D	11.5696	Default	Default	11.5696

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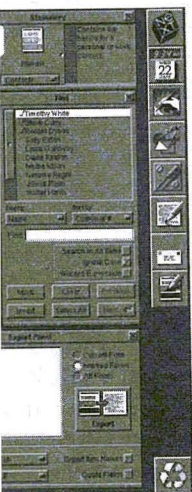


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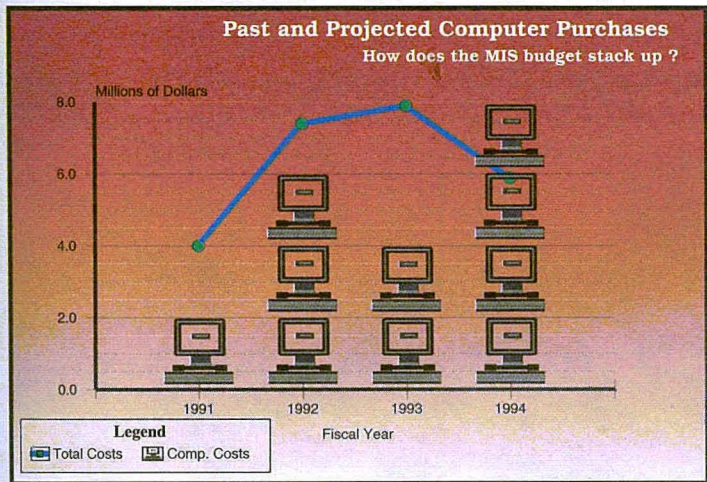
	G	Column 7
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t	3.5696	3.5696
t	4.5696	4.5696
3	5.5696	5.5696
	6.5696	6.5696
t	7.5696	7.5696
t	8.5696	8.5696
t	9.5696	9.5696
t	10.5696	10.5696
t	11.5696	11.5696

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objects •Full support for
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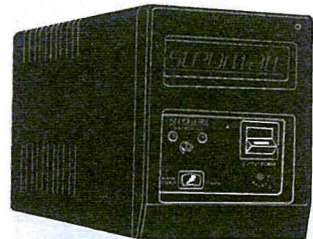
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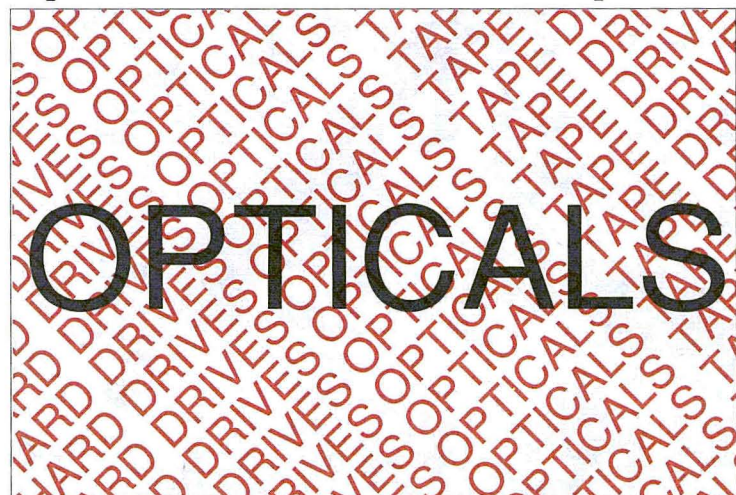
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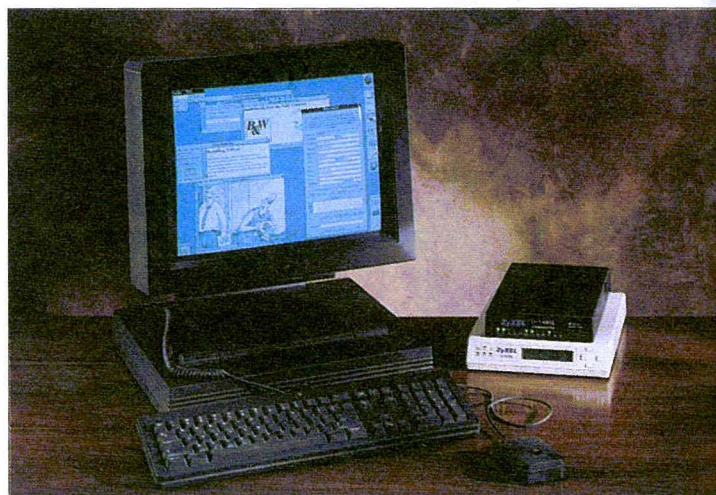


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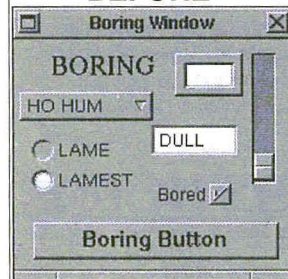
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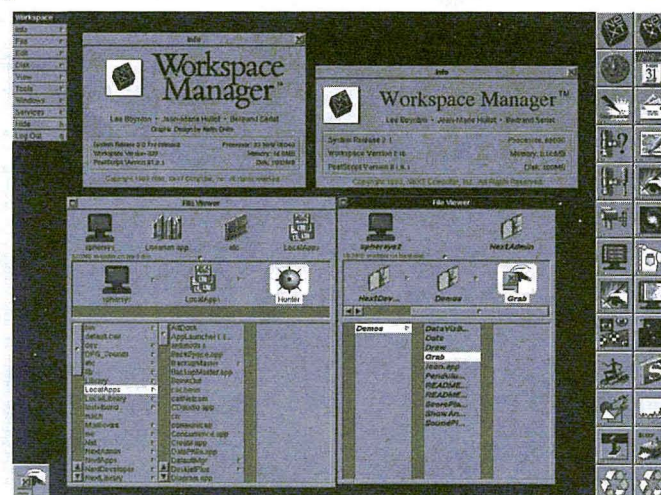
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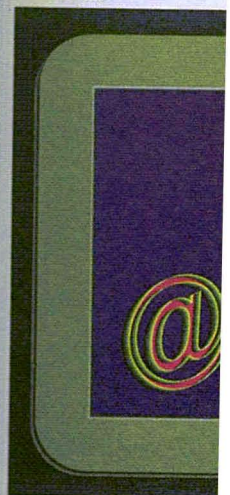
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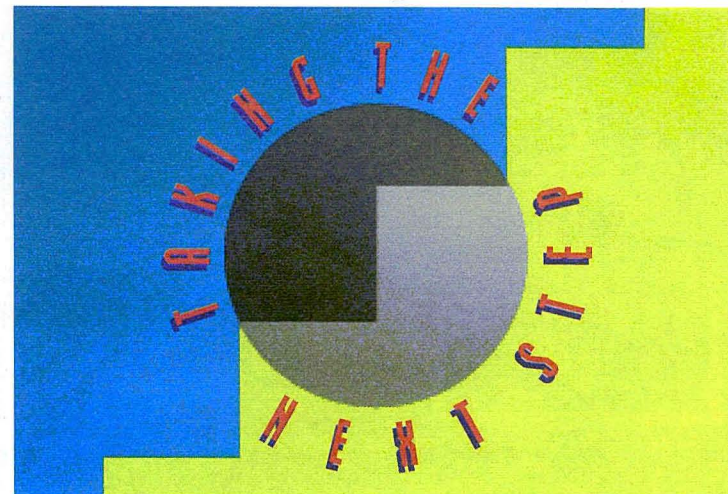


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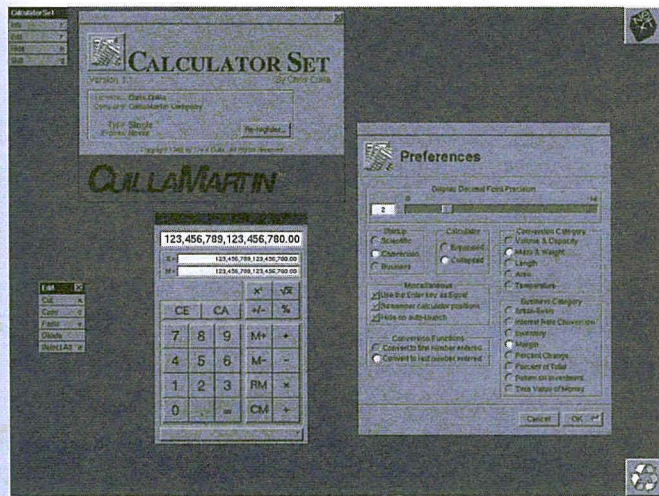


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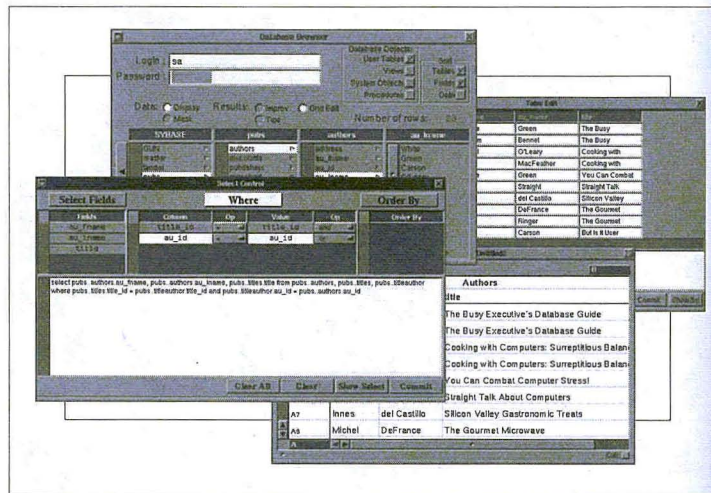
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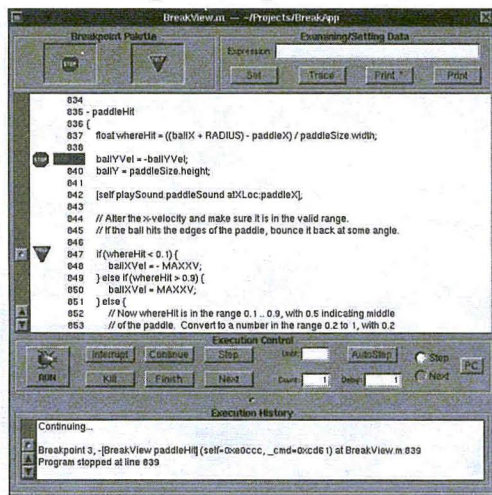


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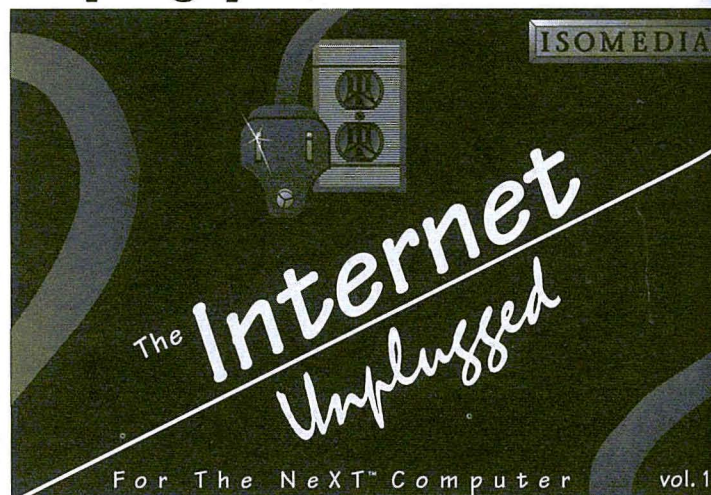


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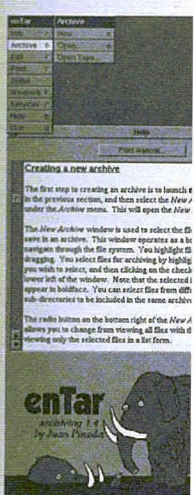
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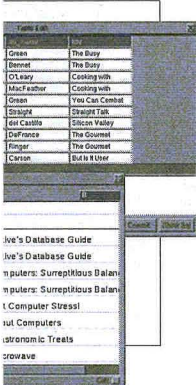
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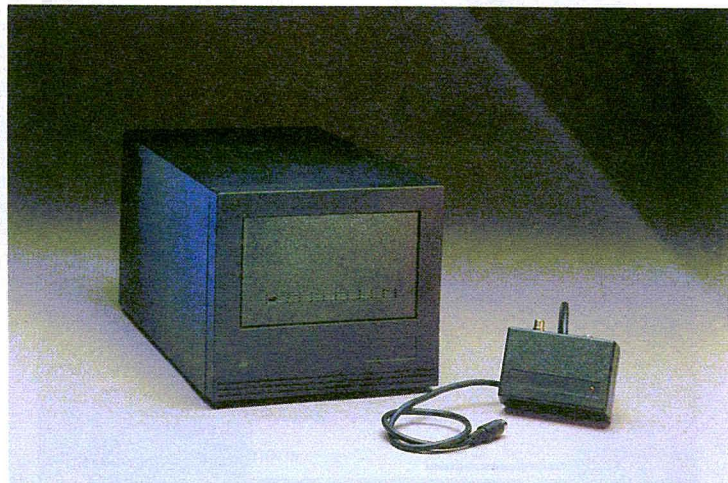
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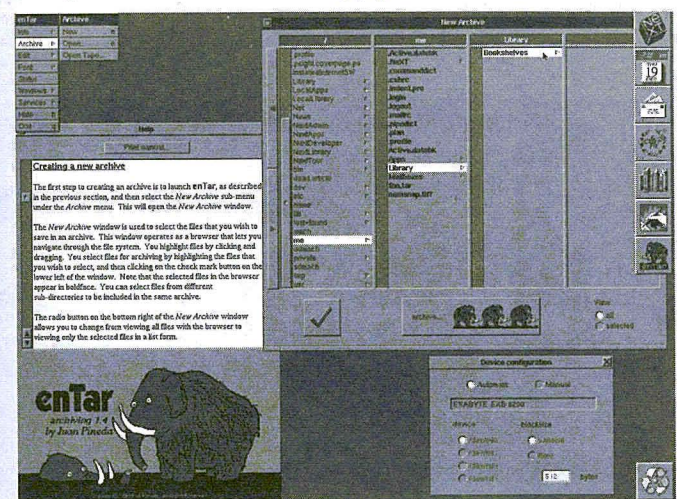
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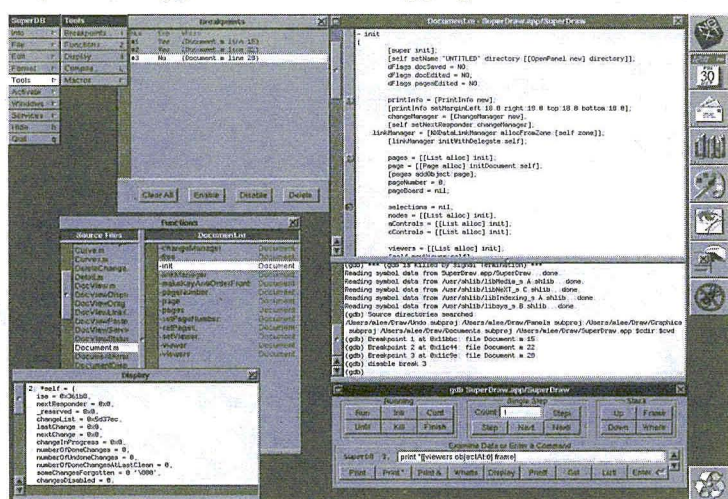


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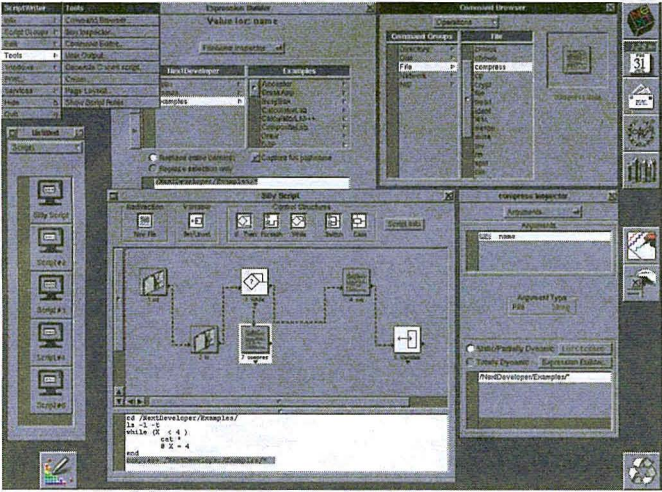
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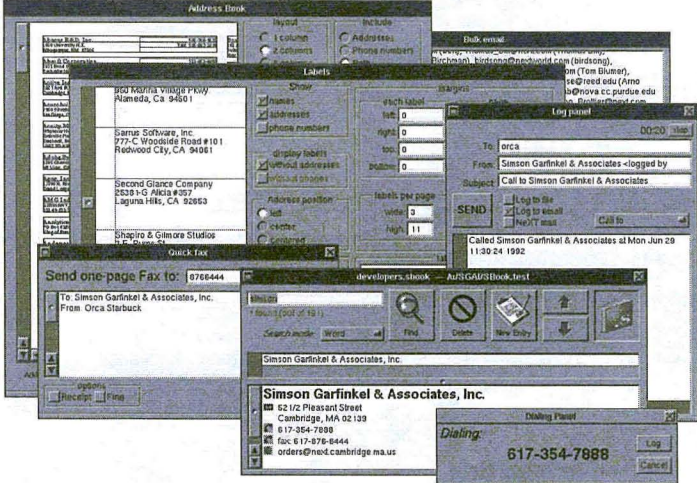


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RS #	COMPANY	PAGE #
61	Abacus Research & Dev.	34
108	Advanced Electronic Systems	69
54	AEC Software	16
104	Andy Hill	68
39	Appsoft	38-39
64	Athena Design	36
69	Axsys	12
24	Baccus	14
110	Black & White Software	70
118	Black Market	71
105	Blacksmith	69
72	Chromagrafx	33
26	Contemporary Cybernetics	4
25	Contemporary Cybernetics	44
122	Cube Route, The	73
115	Cuilla Martin	71
116	Cuilla Martin	71
101	DBSA	68
10	Digital Instrumentation (DIT)	11
102	Ensuing Technologies	68
125	Firstsoft	74
13	HSD	C2
123	Impact Software	73
124	Impact Software	73
43	Information Technology Solutions	65
3	Insignia Solutions	15
66	Interactive Technology	3
67	Interactive Technology	64
120	Isomedia	72

RS #	COMPANY	PAGE #
71	Light Printing	35
29	Lighthouse Design	C3
117	Metaresearch	72
15	NeXT Computer	18-19
	NeXT Connection	48-63
65	nPOINT	12
38	Objective Technologies (OTI)	10
119	Onyx Systems	72
59	Pages	17
51	Pencom	13
107	Pinnacle Research	69
109	Radiant Technologies	70
70	RDR	66
113	RDR	71
68	Ridge Back Solutions	10
114	Ross Communications	71
73	Sarrus Software	9
103	Servare	68
127	Simson Garfinkel & Associates	74
121	Skylee Press	73
112	Spherical Solutions	70
44	Stone Design Corp.	C4
56	Stone Design Corp.	2
57	Stone Design Corp.	37
126	Tecor	74
35	Toshiba	26
52	Trident Data Systems	14
111	Trident Data Systems	70
106	Trillium Sand Research	69
53	Vertex Software	11
37	White Pine Software	35

Classified

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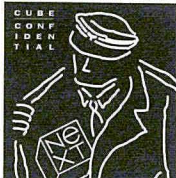
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More companies die of indigestion than starvation." That's what Steve Jobs told us during the first NeXT product introduction. It was October of 1988, a time of some quaintness when viewed from here.

Ross Perot (who was there) hadn't run for president even once yet. It was claimed that all NeXT data storage and distribution would occur on a Canon floptical. And, when someone asked how a nonstudent might have some of this cool, black stuff, Jobs shot back, "Matriculate."

Obviously, there've been a few bytes through the old CPU since then. But perhaps more startling than anything that has happened to NeXT following that moment of great and innocent potential is what hasn't happened. NeXT has neither disappeared from the face of the earth nor entered into the sort of logarithmic growth spiral that passes for health in the computer business.

Instead, it has experienced incremental but steady gains in revenue, defying the conventional wisdom, which maintains that any computer company not busy growing like kudzu is busy dying. This unquestioned faith in explosive growth puzzles me: If you look at the ash heap of computer-industry history, you find as many companies that have choked from too much growth as have starved from too little.

Now might be a good time for Jobs to heed his own wisdom. There are signs emerging that NeXT's creative anarchy might become simple chaos. Consider, for example, the discouraging matter of NeXTSTEP 3.0.

Among the many reasons I have loved my NeXTcube has been the uncrashable stoicism of its operating system. After years on a Macintosh, which rarely stayed on its feet a full hour, I developed a Save reflex like a bad tic. So a machine that crashed precisely three times in Fiscal 1992 is like digital Valhalla. Not only was my NeXT ridiculously robust, it was fast, efficient, and elegant. I never had to wait for anything.

These wonderful days now seem to be ending. While NeXTSTEP is hardly as squishy as System 7 (not to mention Windows), it is certainly far more mortal than its predecessors. Under it, programs regularly seem to die, and do astonishingly unexpected things. Too often the whole enchilada just heads south. If, by some miracle, it doesn't crash for a few days, it fills your hard disk with unretrieved virtual-memory allocations. And then it dies.

In sum, 3.0 looks to me like a product made in haste. This bodes ill for NeXT, which is now in such a panic to get NeXTSTEP '486 to its corporate mega-darlings that it may be neglected to dance with the gal that brung 'im.

To take one small example, the largest single purchaser of NeXTs may be a certain shadowy division of Armageddon Inc., which has also bought copies of Stone Design's DataPhile by the C5A-load. Unfortunately, in allocating resources to NeXTSTEP '486, NeXT has dropped support for the indexing tool kit, the engine that drives DataPhile. This move could irritate some good customers at Langley.

There's more. Much more. Orders are painfully slow in delivery. Customer support is going

If I recited a proper bill of particulars, I'd squeeze the puzzle right off the bottom of the page.

Like Shaman Steve's previous corporate construction, NeXT is, for its appearance of anodized-magnesium modernity, a tribal culture. Like other natural organisms, it is highly sensitive to the ravages of too much too fast. If the condition of 3.0 is any indication, the leaders at NeXT should pause to consider the full consequences of achieving the rate of growth they so fervently wish for. ♦

JOHN PERRY BARLOW will appear in this space every issue.

Scarlet Letter

NEXT GAMES

by Scott Kim

Creating the graphical user interface to a program is an arduous process on most computers. One of the reasons software developers love the NeXT machine is Interface Builder, which lets you create the screen appearance of a program simply by dragging premade interface elements from a palette.

I used Interface Builder to create a custom application called The Scarlet Letter. There are six controls, each with two positions: horizontal slider (left or right), vertical slider (top or bottom), radio buttons (the white button is selected), switch (checked or unchecked), button (turns white when pressed), and pop-up list (one of two possible words).

Each control affects a different variable, each with two values: background color (yellow or green), foreground color (scarlet or blue), letter (A or B), case (upper or lower), style (regular or italic), and orientation (right side up or upside down).

Unfortunately, some prankster has changed the labels on my controls. All I was able to salvage were these four screen shots. Can you help me figure out which variable each control affects?



CONTEST

Fill in each variable's value in the blanks below. For instance, liberal might be scarlet and conservative might be blue. Up to ten lucky winners will receive a NeXTWORLD T-shirt. Address entries to Puzzle Editor, NeXTWORLD, 501 Second St., San Francisco CA 94107. Fax us at 415/978-3196. And while you're at it, write us a note about the magazine. Entries must be received by February 15, 1993.

Liberal	_____	Conservative
Happy	_____	Sad
Classical	_____	Rock
Pants (pressed)	_____	Pants (not pressed)
Baggage (checked)	_____	Baggage (not checked)
Lasagna	_____	Ravioli

Your name and address

The correct answer for the Winter 1992 NeXT Game was Digital Librarian. The close-up matched the top of the icon's second book.

A Different
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- Conservative
- Sad
- Rock
- Pants (not pressed)
- Baggage (not checked)
- Ravioli

Digital Librarian. The close-up

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